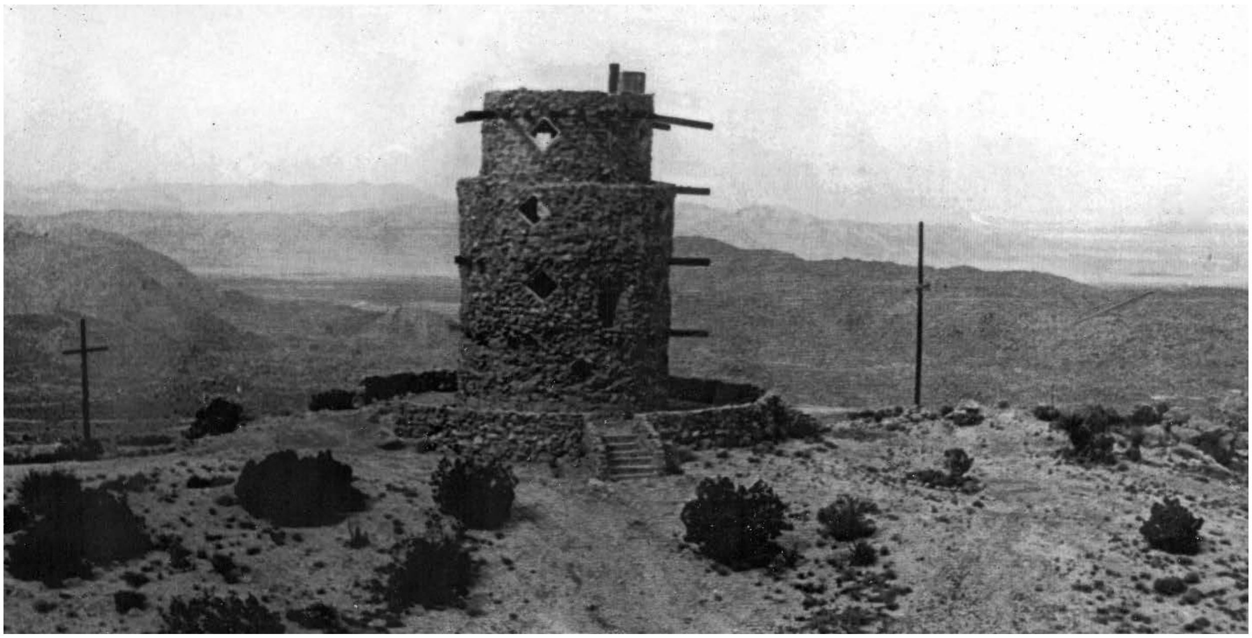
IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT



The Desert View Tower located on Interstate 8, near Jacumba and ocotillo, in western Imperial County, Southern California, at 3,000 feet (910 m) in elevation, in the In-Ko-Pah Mountains. https://www.desertviewtower.com/2016/10/31/history-of-the-tower/

July 8, 2015
Exceptional Event Documentation
For the Imperial County PM_{10} Nonattainment Area

FINAL REPORT

October 4, 2018

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ACRONYM	DESCRIPTIONS
AOD	Aerosol Optical Depth
AQI	Air Quality Index
AQS	Air Quality System
BACM	Best Available Control Measures
BAM 1020	Beta Attenuation Monitor Model 1020
BLM	United States Bureau of Land Management
BP	United States Border Patrol
CAA	Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice
DCP	Dust Control Plan
DPR	California Department of Parks and Recreation
EER	Exceptional Events Rule
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GOES-W/E	Geostationary Operational Environmental Satellite (West/East)
HC	Historical Concentrations
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
ICAPCD	Imperial County Air Pollution Control District
INPEE	Initial Notification of a Potential Exceptional Event
ITCZ	Inter Tropical Convergence Zone
KBLH	Blythe Airport
KCZZ	Campo Airport
KIPL	Imperial County Airport
KNJK	El Centro Naval Air Station
KNYL/MCAS	Yuma Marine Corps Air Station
KPSP	Palm Springs International Airport
KTRM	Jacqueline Cochran Regional Airport (aka Desert Resorts Rgnl Airport)
LST	Local Standard Time
MMML/MXL	Mexicali, Mexico Airport
MODIS	Moderate Resolution Imaging Spectroradiometer
MPH	Miles Per Hour
MST	Mountain Standard Time
NAAQS	National Ambient Air Quality Standard
NCAR	National Center for Atmospheric Research
NCEI	National Centers for Environmental Information
NEAP	Natural Events Action Plan
NEXRAD	Next-Generation Radar
NOAA	National Oceanic and Atmospheric Administration
nRCP	Not Reasonably Controllable or Preventable

NWS	National Weather Service
PDT	Pacific Daylight Time
PM_{10}	Particulate Matter less than 10 microns
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PST	Pacific Standard Time
QA/QC	Quality Assured and Quality Controlled
QCLCD	Quality Controlled Local Climatology Data
RACM	Reasonable Available Control Measure
RAWS	Remote Automated Weather Station
SIP	State Implementation Plan
SLAMS	State Local Ambient Air Monitoring Station
SMP	Smoke Management Plan
SSI	Size-Selective Inlet
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTC	Coordinated Universal Time
WRCC	Western Regional Climate Center

I Introduction

On July 8, 2015, a State and Local Ambient Air Monitoring Station (SLAMS), located in Niland, California (AQS Site Code 06-025-4004), measured an exceedance of the National Ambient Air Quality Standard (NAAQS). The exceedance occurred when the Federal Equivalent Method (FEM), Beta Attenuation Monitor Model 1020 (BAM 1020) measured a 24-hr (midnight to midnight) average Particulate Matter less than 10 microns (PM_{10}) concentration of 166 µg/m^3 (**Table 1-1**). PM_{10} 24-hr measurements measured above the 150 µg/m^3 are exceedances of the NAAQS. The SLAMS in Niland was the only station in Imperial County to measure an exceedance of the PM_{10} NAAQS on July 8, 2015.

TABLE 1-1
CONCENTRATIONS OF PM_{10} ON JULY 8, 2015

DATE	MONITORING SITE	AQS ID	POC(s)	HOURS	24-HOUR CONCENTRATION µg/m^3	PM_{10} NAAQS µg/m^3
7/8/2015	**Niland**	**06-025-4004**	**3**	**24**	**166**	**150**
7/8/2015	Brawley	06-025-0007	3	24	128	150

*All time referenced throughout this document is in Pacific Standard Time (PST) unless otherwise noted[1]
**July 8, 2015 was not a scheduled sampling day and only the Brawley and Niland stations measure with continuous monitors

The Imperial County Air Pollution Control District (ICAPCD) has been submitting PM_{10} data from Federal Reference Method (FRM) Size-Selective Instruments (SSI) since 1986 into the United States Environmental Protection Agency's (USEPA) Air Quality System (AQS). Prior to 2013 all continuous measured PM_{10} data was non-regulatory, thus measured in local conditions. However, by 2013 ICAPCD began formally submitting continuous FEM PM_{10} data from BAM 1020's into the USEPA managed AQS. Because regulatory consideration of reported data must be in standard conditions, as required by USEPA, all continuous PM_{10} data since 2013 is regulatory. On July 8, 2015 the Niland monitor was impacted by elevated particulate matter caused by the transport of fugitive windblown dust from high winds associated with a small but potent upper-level low pressure located just off the coast of central California that moved inland, causing strong westerly winds across southeastern California, including Imperial County.[2]

This report demonstrates that a naturally occurring event caused an exceedance observed on July 8, 2015, which elevated particulate matter and affected air quality. The report provides concentration to concentration monitoring site analyses supporting a clear causal relationship between the event and the monitored exceedances and provides an analysis supporting the not reasonably controllable or preventable (nRCP) criteria. Furthermore, the report provides

[1] According to the National Institute of Standards and Technology (NIST) Time and Frequency Division the designation of the time of day for specific time zones are qualified by using the term "standard time" or "daylight time". For year-round use, the designation can be left off inferring "local time" daylight or standard whichever is present. For 2015, Pacific Daylight Time (PDT) is March 8 through November 1. https://www.nist.gov/pml/time-and-frequency-division/local-time-faqs#intl

[2] Area Forecast Discussion National Weather Service San Diego CA 0755 PM PST (0855 PM PDT) Monday, July 6, 2015, 151 AM PST (251 AM PDT) Tuesday, July 7,2015, 237 AM PST (337 AM PDT) Wednesday, July 8, 2015 and Phoenix AZ 248 AM PST (348 AM MST), 705 PM PST (805 PM MST) Tuesday, July 7, 2015, 110 PM PST (210 PM MST) Wednesday, July 8, 2015

information that the exceedances would not have occurred without the entrainment of fugitive windblown dust from outlying deserts and mountains within the Sonoran Desert. The document further substantiates the request by the ICAPCD to exclude PM_{10} 24-hour NAAQS exceedance of 166 µg/m^3 (**Table 1-1**) as an exceptional event. This demonstration substantiates that this event meets the definition of the USEPA Regulation for the Treatment of Data Influenced by Exceptional Events (EER)[3].

I.1 Demonstration Contents

Section II - Describes the July 8, 2015 event as it occurred in California and into Imperial County, providing background information of the exceptional event and explaining how the event affected air quality. Overall, this section provides the evidence that the event was a natural event.

Section III - Using time-series graphs, summaries and historical concentration comparisons of the Niland monitor this section discusses and establishes how the July 8, 2015 event affected air quality demonstrating that a clear causal relationship exists between the event and the monitored exceedance. It is perhaps of some value to mention that the time-series graphs include PM_{10} data measured in both local conditions and standard conditions. Measured PM_{10} continuous data prior to 2013 is in local conditions, all other data is in standard conditions. The concentration difference between local and standard conditions has an insignificant impact on any data analysis. Overall, this section provides the evidence that human activity played little or no direct causal role in the July 8, 2015 event and its resulting emissions defining the event as a "natural event".[4]

Section IV - Provides evidence that the event of July 8, 2015 was not reasonably controllable or preventable despite the full enforcement and implementation of Best Available Control Measures (BACM).

Section V - Brings together the evidence presented within this report to show that the exceptional event affected air quality; that the event was not reasonably controllable or preventable; that there was a clear causal relationship between the event and the exceedance, and that the event was a natural event.

I.2 Requirement of the Exceptional Event Rule

The above sections combined comprise the technical requirements described under the Exceptional Events Rule (EER) under 40 CFR §50.14(c)(3)(iv). However, in order for the USEPA to concur with flagged air quality monitoring data, there are additional non-technical requirements.

[3] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

[4] Title 40 Code of Federal Regulations part 50: §50.1(k) Natural event means an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.

I.2.a Public Notification that a potential event was occurring (40 CFR §50.14(c)(1))

The ICAPCD provided the NWS office notification via the ICAPCD's webpage that an unseasonably deep trough of low pressure off the central California coast would be moving through the region. The notification provided both the San Diego and Phoenix NWS office forecast for west winds 20 to 30 mph with gusts up to 45 mph. Although west winds were forecasted, warm temperatures allowed for a higher-level inversion layer therefore the ICAPCD declared a burn day. On July 8, 2015, the ICAPCD did not receive complaints regarding burning. **Appendix A** contains copies of pertinent notices to the July 8, 2015 exceptional event.

I.2.b Initial Notification of Potential Exceptional Event (INPEE) (40 CFR §50.14(c)(2))

States are required under federal regulation to submit measured ambient air quality data into the AQS. AQS is the federal repository of Quality Assured and Quality Controlled (QA/QC) ambient air data used for regulatory purposes. When States intend to request the exclusion of one or more exceedances of a NAAQS as an exceptional event a notification to the Administrator is required. Notification occurs when an agency submits a request, which includes an initial event description, for flagging data in AQS.

On October 3, 2016, the US EPA promulgated revisions to the Exceptional Events rule, which included the requirement of an "Initial Notification of Potential Exceptional Event" (INPEE) process. This revised INPEE process requires communication between the US EPA regional office and the State, prior to the development of a demonstration. The intent of the INPEE process is twofold: to determine whether identified data may affect a regulatory decision and whether a State should develop/submit an EE Demonstration.

The ICAPCD made a formal written request to the California Air Resources Board (CARB) to place preliminary flags on SLAMS measured PM_{10} concentration from the Niland monitor on March 7, 2016. Subsequently there after the ICAPCD sent a revised request on March 18, 2016 providing additional information describing the event. **Table 1-1** above provides the correct concentration for Niland. The difference in concentrations between local and standard has an insignificant impact on any data analysis. The submitted request included a brief description of the meteorological conditions for July 8, 2015 indicating that a potential natural event occurred.

I.2.c Documentation that the public comment process was followed for the event demonstration that was flagged for exclusion (40 CFR §50.14(c)(3)(v))

The ICAPCD posted, for a 30-day public review, a draft version of this demonstration on the ICAPCD webpage and published a notice of availability in the Imperial Valley Press on January 31, 2018. The published notice invited comments by the public regarding the request, by the ICAPCD, to exclude the measured concentrations of 166 $\mu g/m^3$ (**Table 1-1**) which occurred on July 8, 2015 in Niland. The final closing date for comments was March 2, 2018. **Appendix A** contains a copy of the public notice affidavit along with any comments received by the ICAPCD for submittal as part of the demonstration (40 CFR §50.14(c)(3)(v)).

I.2.d Documentation submittal supporting an Exceptional Event Flag (40 CFR §50.14(c)(3)(i))

States that have flagged data as a result of an exceptional event and who have requested an exclusion of said flagged data are required to submit a demonstration that justifies the data exclusion to the USEPA in accordance with the due date established by USEPA during the INPEE process (40 CFR §50.14(c)(2)). Currently, bi-weekly meetings between USEPA, CARB and Imperial County continue to discuss any potential documentation of events.

The ICAPCD, after the close of the comment period and after consideration of the comments will submit this demonstration along with all required elements, including received comments and responses to USEPA Region 9 in San Francisco, California. The submittal of the July 8, 2015 demonstration will have a regulatory impact upon the development and ultimate submittal of the PM_{10} State Implementation Plan for Imperial County in 2018.

I.2.e Necessary demonstration to justify an exclusion of data under (40 CFR§50.14(c)(3)(iv))

A This demonstration provides evidence that the event, as it occurred on July 8, 2015, satisfies the definition in 40 CFR §50.1(j) and (k) for an exceptional event.

- a The event created the meteorological conditions that entrained emissions and caused the exceedance.
- b The event clearly “affects air quality” such that there is the existence of a clear causal relationship between the event and the exceedance.
- c Analysis demonstrates that the event-influenced concentrations compared to concentrations at the same monitor at other times supports the clear causal relationship.
- d The event “is not reasonably controllable and not reasonably preventable.”
- e The event is “caused by human activity that is unlikely to recur at a particular location or [is] a natural event.”
- f The event is a “natural event” where human activity played little or no direct causal role.

B This demonstration provides evidence that the exceptional event affected air quality in Imperial County by demonstrating a clear causal relationship between the event and the measured concentrations in Niland.

C This demonstration provides evidence of the measured concentrations to concentrations at the same monitor at other times supporting the clear causal relationship between the event and the affected monitor.

II July 8, 2015 Conceptual Model

This section provides a summary description of the meteorological and air quality conditions under which the July 8, 2015 event unfolded in Imperial County. The subsection elements include

- » A description and map of the geographic setting of the air quality and meteorological monitors
- » A description of Imperial County's climate
- » An overall description of meteorological and air quality conditions on the event day.

II.1 Geographic Setting and Monitor Locations

According to the United States Census Bureau, Imperial County has a total area of 4,482 square miles of which 4,177 square miles is land and 305 square miles is water. Much of Imperial County is below sea level and is part of the Colorado Desert an extension of the larger Sonoran Desert (**Figure 2-1)**.The Colorado Desert not only in includes Imperial County but a portion of San Diego County.

FIGURE 2-1
COLORADO DESERT AREA IMPERIAL COUNTY

Fig 2-1: 1997 California Environmental Resources Evaluation System. According to the United States Geological Survey (USGS) Western Ecological Research Center the Colorado Desert bioregion is part of the bigger Sonoran Desert Bioregion which includes the Colorado Desert and Upper Sonoran Desert sections of California and Arizona, and a portion of the Chihuahuan Basin and Range Section in Arizona and New Mexico (Forest Service 1994)

A notable feature in Imperial County is the Salton Sea, which is at approximately 235 feet below sea level. The Chocolate Mountains are located east of the Salton Sea and extend in a northwest-southeast direction for approximately 60 miles (**Figure 2-2)**. In this region, the geology is dominated by the transition of the tectonic plate boundary from rift to fault. The southernmost strands of the San Andreas Fault connect the northern-most extensions of the East Pacific rise. Consequently, the region is subject to earthquakes and the crust is being stretched, resulting in a sinking of the terrain over time.

FIGURE 2-2
SURROUNDING AREAS OF THE SALTON SEA

Fig 2-2: Image courtesy of the Image Science and Analysis Laboratory NASA Johnson Space Center, Houston Texas

All of the seven incorporated cities, including the unincorporated township of Niland, are surrounded by agricultural fields to the north, east, west and south (**Figure 2-6)**. Together, the incorporated cities, including Niland, and the agricultural fields make what is known as the Imperial Valley. Surrounding the Imperial Valley are desert areas found on the eastern and western portions of Imperial County.

The desert area, found within the western portion of Imperial County is of note because of its border with San Diego County. From west to east, San Diego County stretches from the Pacific Ocean to its boundary with Imperial County. San Diego County has a varied topography. On its western side is 70 miles (110 km) of coastline. Most of San Diego between the coast and the Laguna Mountains consists of hills, mesas, and small canyons. Snow-capped (in winter) mountains rise to the northeast, with the Sonoran Desert to the far east. Cleveland National Forest is spread across the central portion of the county, while the Anza-Borrego Desert State Park occupies most of the northeast. The southeastern portion of San Diego County is comprised of distinctive Peninsular mountain ranges. The mountains and deserts of San Diego comprise the eastern two-thirds of San Diego County and are primarily undeveloped back county with a native plant community known as chaparral. Of the nine major mountain ranges within San Diego County, the In-Ko-Pah Mountains and the Jacumba Mountains border Mexico and Imperial County.

Both mountain ranges provide the distinctive weathered dramatic piles of residual boulders that can be seen while driving Interstate 8 from Imperial County through Devil's Canyon and In-Ko-Pah Gorge. Interstate 8 runs along the US border with Mexico from San Diego's Mission Bay to just southeast of Casa Grande Arizona.

FIGURE 2-3
JACUMBA PEAK

Fig 2-3: The Jacumba Mountains reach an elevation of 4,512 feet (1,375 m) at Jacumba Peak, near the southern end of the chain. Source: Wikipedia at https://en.wikipedia.org/wiki/Jacumba_Mountains

Northwest and northeast of the Jacumba Mountains is the Tierra Blanca Mountains, the Sawtooth Mountains and Anza-Borrego Desert State Park. Within the mountain ranges and the Anza-Borrego Desert State Park, there exists the Vallecito Mountains, the Carrizo Badlands, the Carrizo Impact Area, Coyote Mountains and the Volcanic Hills to name of few. Characteristically, these areas all have erosion that has occurred over time that extends from the Santa Rosa Mountains into northern Baja California in Mexico. For example, the Coyote Mountains consists of sand dunes left over from the ancient inland Sea of Cortez. Much of the terrain is still loose dirt, interspersed with sandstone and occasional quartz veins. The nearest community to the Coyote Mountain range is the community of Ocotillo. Of interest are the fossilized and hollowed out sand dunes that produce wind caves.

FIGURE 2-4
ANZA-BORREGO DESERT STATE PARK
CARRIZO BADLANDS

Fig 2-4: View southwest across the Carrizo Badlands from the Wind Caves in Anza-Borrego Desert State Park. Source: Wikipedia at https://en.wikipedia.org/wiki/Carrizo_Badlands

The Carrizo Badlands, which includes the Carrizo Impact Area used by the US Navy as an air-to-ground bombing range during World War II and the Korean War, lies within the Anza-Borrego Desert State Park. The Anza-Borrego Desert State Park is located within the Colorado Desert, is the largest state park in California occupying eastern San Diego County, reaching into Imperial and Riverside counties. The two communities within Anza-Borrego Desert State Park are Borrego Springs and Shelter Valley.

The Anza-Borrego Desert State Park lies in a unique geologic setting along the western margin of the Salton Trough. The area extends north from the Gulf of California to San Gorgonio Pass and from the eastern rim of the Peninsular Ranges eastward to the San Andreas Fault zone along the far side of the Coachella Valley. The Anza-Borrego region changed gradually over time from intermittently being fed by the Colorado River Delta to dry lakes and erosion from the surrounding mountain ranges. The area located within the southeastern and northeastern section of San Diego County is a source of entrained fugitive dust emissions that impact Imperial County when westerly winds funnel through the unique landforms causing in some cases wind tunnels that cause increases in wind speeds.

Historical observations have indicated that the desert slopes and mountains of San Diego are a source of fugitive emissions along with those deserts located to the east and west of Imperial County, which extend into Mexico (Sonoran Desert, **Figure 2-7**). Combined, the desert areas and mountains of San Diego and the desert areas that extend into Mexico are sources of dust emissions, which affect the Imperial County during high wind events.

FIGURE 2-5
ANZA-BORREGO DESERT STATE PARK
DESERT VIEW FROM FONT'S POINT

Fig 2-5: Desert view from Font's Point. Source: Font's Point Anza-Borrego Photographed by and copyright of (c) David Corby; Wikipedia at https://en.wikipedia.org/wiki/Anza-Borrego_Desert_State_Park

FIGURE 2-6
LOCATION AND TOPOGRAPHY OF IMPERIAL COUNTY

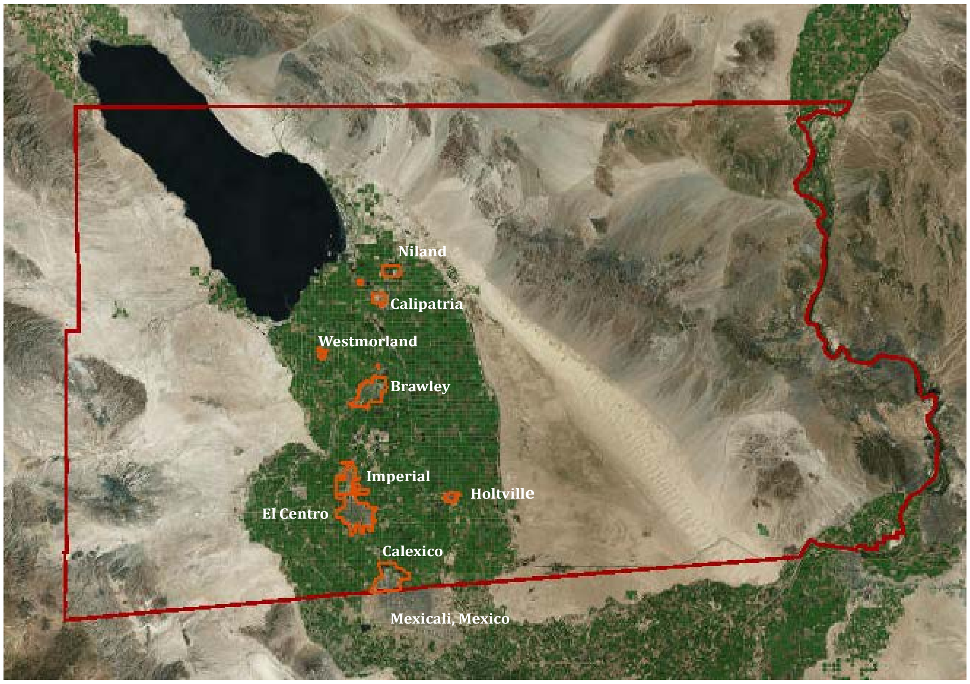


Fig 2-3: Depicts the seven incorporated cities within Imperial Valley - City of Calipatria, City of Westmorland, City of Brawley, City of Imperial, City of El Centro, City of Holtville, and the City of Calexico. Niland is unincorporated. Mexicali, Mexico is to the south

FIGURE 2-7
DESERTS IN CALIFORNIA, YUMA AND MEXICO

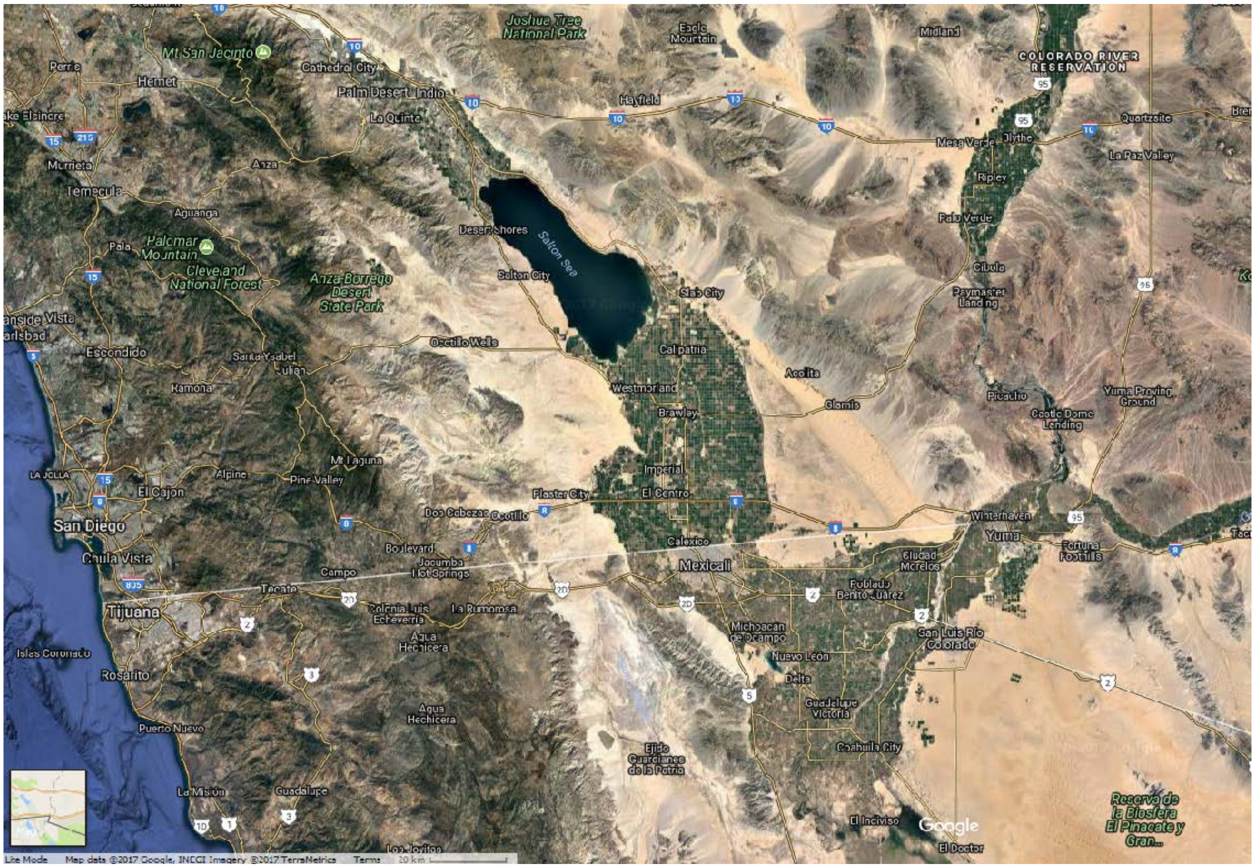


Fig 2-7: Depicts the Sonoran Desert as it extends from Mexico into Imperial County. Source: Google Earth Terra Matrics

The air quality and meteorological monitoring stations used in this demonstration are shown in **Figure 2-8**. SLAMS in Imperial County are located in Calexico, El Centro, Westmorland, Brawley, and Niland. Each station measures air quality and meteorological data; the station located in Brawley only measures air quality and no meteorological data. Other air monitoring stations with air quality and meteorological data used for this demonstration include stations in Riverside County and Arizona (**Figure 2-8 and Table 2-1)**.

As mentioned above, the PM_{10} exceedance on July 8, 2015, occurred at the Niland station. The Niland station is one of the "northern" monitoring sites within the Imperial County air monitoring network. In order to properly analyze the contributions of meteorological conditions occurring on July 8, 2015, other meteorological sites used in this demonstration include airports within eastern Riverside County, southeastern San Diego County, southwestern Yuma County (Arizona), Imperial County, and other sites relevant to the wind event, such as within northern Mexico (**Figure 2-8)**.

FIGURE 2-8
MONITORING SITES IN AND AROUND IMPERIAL COUNTY

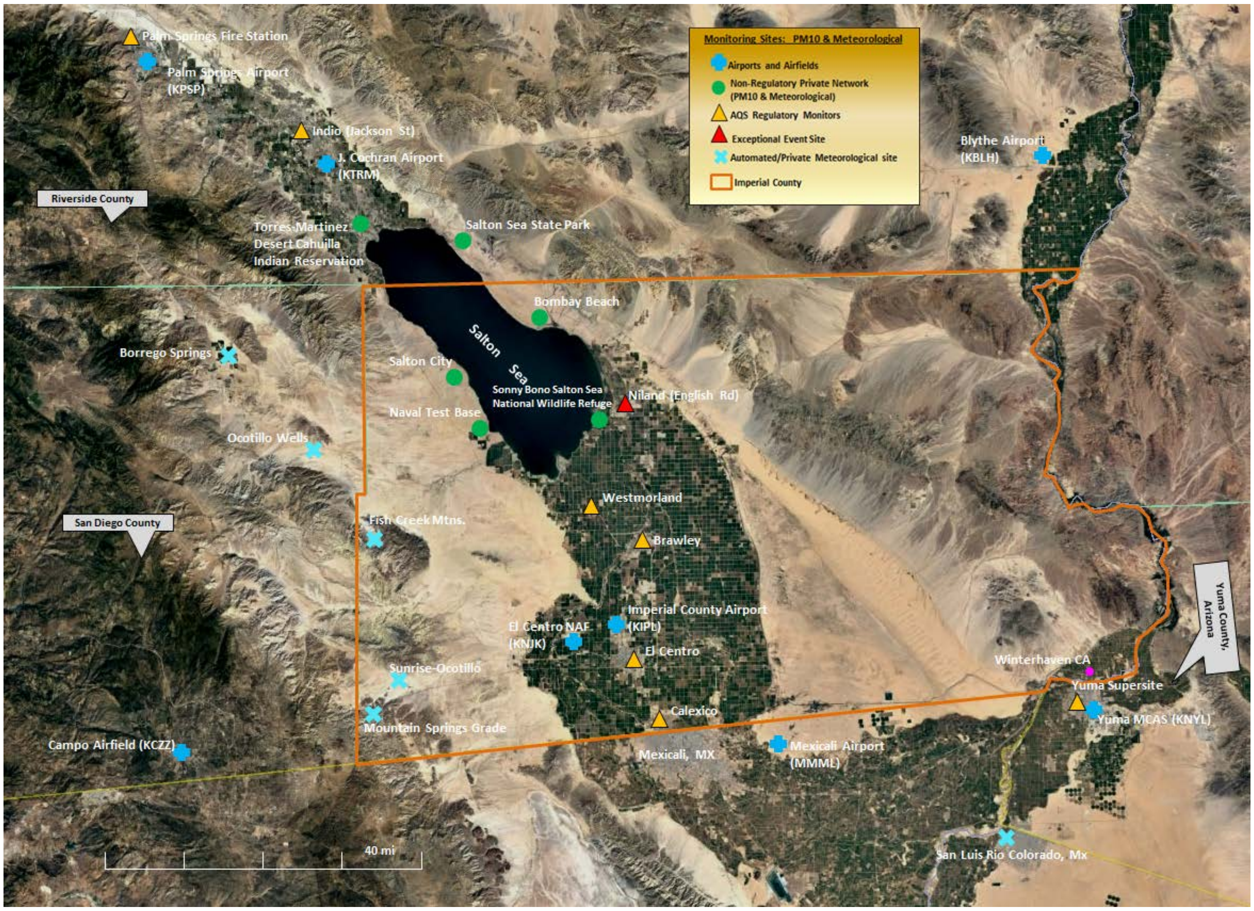


Fig 2-8: Depicts a select group of meteorological and PM_{10} monitoring sites in Imperial County, eastern Riverside County, southeastern San Diego County, southwestern Arizona (Yuma County), and northern Mexico. The image provides the location of potential sites used to gather data in support of an Exceptional Event Demonstration. Source: Google Earth

In addition to meteorological sites, there are non-regulatory PM_{10} sites located around the Salton Sea that maybe referenced as an aid to help the reader understand the direction and velocity of winds that affect Imperial County. Unless, otherwise specifically indicated concentration references do not imply emissions from the surrounding playa of the Salton Sea. Three sites, in specific, are the Salton City air monitoring station, the Naval Test Base air monitoring station and the Sonny Bono air monitoring station. These privately owned stations are non-regulatory (**Figures 2-9 to 2-12**). The Salton City station is located 33.27275°N latitude and 115.90062˚W longitude, on the western edge of the Salton Sea (**Figure 2-9**). The station abuts a water reservoir along the Salton Sea with surrounding chaparral vegetation and unpaved open areas and roads. The Naval Test Base station is located 33.16923°N latitude and 115.85593˚W longitude, on the southwestern edge of the Salton Sea (**Figure 2-11**). The station sits on an abandoned US Military site, still owned by the Department of Defense. Unlike the Salton City station, light chaparral vegetation and sandy open dune areas surround the Naval Test Base station. Directly to the west of the station is an orchard. The Sonny Bono station is located 33.17638°N latitude and 115.62310˚W longitude, on the southern portion of the Salton Sea within the Sonny Bono Salton Sea Wildlife Refuge. The Sonny Bono Salton Sea National Wildlife Refuge is 40 miles north of the Mexican border at the southern end of the Salton Sea within the Sonoran Desert. The Refuge has two separate managed units, 18 miles apart. Each unit contains wetland habitats, farm fields, and tree rows. The land of the Salton Sea Refuge is flat, except for Rock Hill, a small, inactive volcano, located near Refuge Headquarters. Bordering the Refuge is the Salton Sea on the north and farmlands on the east, south, and west.

FIGURE 2-9
SALTON CITY AIR MONITORING STATION

Fig 2-9: Depicts the Salton City air monitoring (circled) site operated by a private entity. Site photos viewed at the California Air Resources Board monitoring website at https://www.arb.ca.gov/qaweb/sitephotos.php?site_no=13604&date=17

FIGURE 2-10
SALTON CITY AIR MONITORING STATION
WEST

Fig 2-10: Photograph taken by the California Air Resources Board audit team in 2017. The photograph taken from the west facing the probe. https://www.arb.ca.gov/qaweb/sitephotos.php?site_no=13604&date=17

FIGURE 2-11
NAVAL TEST BASE AIR MONITORING STATION

Fig 2-11: Depicts the Naval Test Base air monitoring (circled) site operated by a private entity. To view the site photos visit the California Air Resources Board monitoring website at https://www.arb.ca.gov/qaweb/sitephotos.php?site_no=13603&date=17

FIGURE 2-12
NAVAL TEST BASE AIR MONITORING STATION
WEST

Fig 2-12: Photograph taken by the California Air Resources Board audit team in 2017. The photograph taken from the west facing the probe. https://www.arb.ca.gov/qaweb/sitephotos.php?site_no=13604&date=17

FIGURE 2-13
SONNY BONO AIR MONITORING STATION

Fig 2-13: Depicts the Sonny Bono air monitoring (circled) site operated by a private entity. To view the site photos visit the California Air Resources Board monitoring website at https://www.arb.ca.gov/qaweb/sitephotos.php?site_no=13604&date=17

FIGURE 2-14
SONNY BONO SALTON SEA NATIONAL WILDLIFE REFUGE

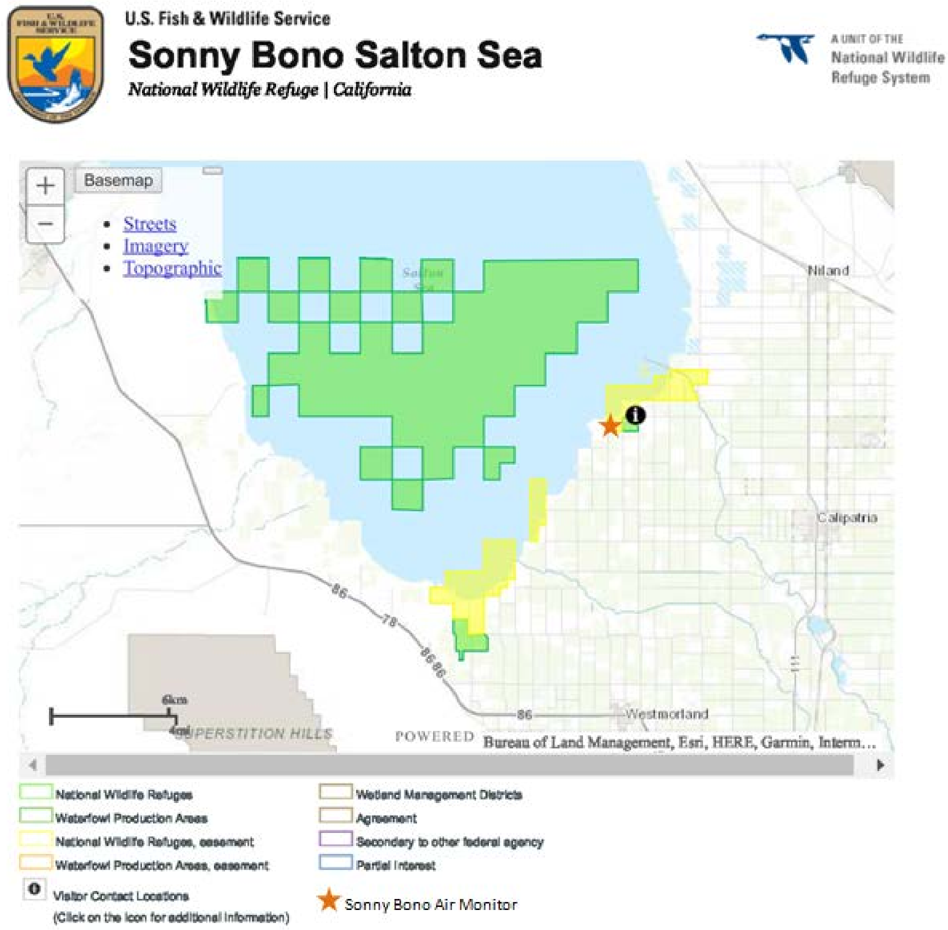


Fig 2-14: The Sonny Bono Wildlife Refuge has about 2,000 acres that are farmed and managed for wetlands. In 1998, the Refuge was renamed after Congressman Sonny Bono, who helped inform the U.S. Congress of the environmental issues facing the Salton Sea as well as acquiring funding for this Refuge to help it respond to avian disease outbreaks and other habitat challenges at the Salton Sea. Source: https://www.fws.gov/refuge/Sonny_Bono_Salton_Sea/about.html

TABLE 2-1
MONITORING SITES IN IMPERIAL COUNTY, RIVERSIDE COUNTY AND ARIZONA
JULY 8, 2015

Monitor Site Name	*Operator	Monitor Type	AQS ID	AQS PARAMETER CODE	ARB Site Number	Elevation (meters)	24-hr PM_{10} (µg/m³) Avg	1-hr PM_{10} (µg/m³) Max	**Time of Max Reading	Max Wind Speed (mph)	**Time of Max Wind Speed
IMPERIAL COUNTY											
Brawley-Main Street #2	ICAPCD	Hi-Vol Gravimetric	06-025-0007	(81102)	13701	-15	-	-	-	-	-
		BAM 1020					128	521	1800		
Calexico-Ethel Street	CARB	Hi-Vol Gravimetric	06-025-0005	(81102)	13698	3	-	-	-	17.4	1600
El Centro-9th Street	ICAPCD	Hi-Vol Gravimetric	06-025-1003	(81102)	13694	9	-	-	-	14.9	1800
Niland-English Road	ICAPCD	Hi-Vol Gravimetric	06-025-4004	(81102)	13997	-57	-	-	-	25.3	1900
		BAM 1020					166	541	1800		
Westmorland	ICAPCD	Hi-Vol Gravimetric	06-025-4003	(81102)	13697	-43	-	-	-	13	1400
RIVERSIDE COUNTY											
Palm Springs Fire Station	SCAQMD	TEOM	06-065-5001	(81102)	33137	174	24	51	2200	-	-
Indio (Jackson St.)	SCAQMD	TEOM	06-065-2002	(81102)	33157	1	149	334	2100	-	-
ARIZONA – YUMA											
Yuma Supersite	ADEQ	TEOM	04-027-8011	(81102)	N/A	60	65	305	2000	-	-

*CARB = California Air Resources Board
*ICAPCD = Air Pollution Control District, Imperial County
*SCAQMD = South Coast Air Management Quality District
*ADEQ =Arizona Department of Environmental Quality

**Time represents the actual time/hour of the measurement in question according to the zone time (PST unless otherwise noted)

II.2 Climate

As mentioned above, Imperial County is part of the Colorado Desert, which is a subdivision of the larger Sonoran Desert (**Figure 2-15**) encompassing approximately 7 million acres (28,000 km^2). The desert area encompasses Imperial County and includes parts of San Diego County, Riverside County, and a small part of San Bernardino County.

FIGURE 2-15
SONORAN DESERT REGION

Fig 2-15: Depicts the magnitude of the region known as the Sonoran Desert. Source: Arizona-Sonora Desert Museum at http://desertmuseum.org/center/map.php

The majority of the Colorado Desert lies at a relatively low elevation, below 1,000 feet (300 m), with the lowest point of the desert floor at 275 feet (84 m) below sea level at the Salton Sea. Although the highest peaks of the Peninsular Range reach elevations of nearly 10,000 feet (3,000 m), most of the region's mountains do not exceed 3,000 feet (910 m).

In the Colorado Desert (Imperial County), the geology is dominated by the transition of the tectonic plate boundary from rift to fault. The southernmost strands of the San Andreas Fault connect to the northern-most extensions of the East Pacific Rise. Consequently, the region is subject to earthquakes, and the crust is being stretched, resulting in a sinking of the terrain over time.

The Colorado Desert's climate distinguishes it from other deserts. The region experiences greater summer daytime temperatures than higher-elevation deserts and almost never experiences frost. In addition, the Colorado Desert experiences two rainy seasons per year (in the winter and late summer), especially toward the southern portion of the region which includes a portion of San Diego County. The Colorado Desert portion of San Diego County receives the least amount of precipitation. Borrego Springs, the largest population center within the San Diego desert region averages 5 inches of rain with a high evaporation rate. By contrast, the more northerly Mojave Desert usually has only winter rains.

The west coast Peninsular Ranges, or other west ranges, of Southern California–northern Baja California, block most eastern Pacific coastal air and rains, producing an arid climate. Other short or longer-term weather events can move in from the Gulf of California to the south, and are often active in the summer monsoons. These include remnants of Pacific hurricanes, storms from the southern tropical jet stream, and the northern Inter Tropical Convergence Zone (ITCZ).

The arid nature of the region is demonstrated when historic annual average precipitation levels in Imperial County average 3.11” (**Figure 2-16)**. During the 12 month period prior to the July 8, 2015 event, Imperial County measured a total annual precipitation of 3.55 inches. The slight increase in precipitation of 0.44 inches was insufficient to relieve the existing arid conditions that result in soils that are particularly susceptible to particulate suspension by the elevated gusty winds.

FIGURE 2-16
IMPERIAL COUNTY HISTORICAL WEATHER

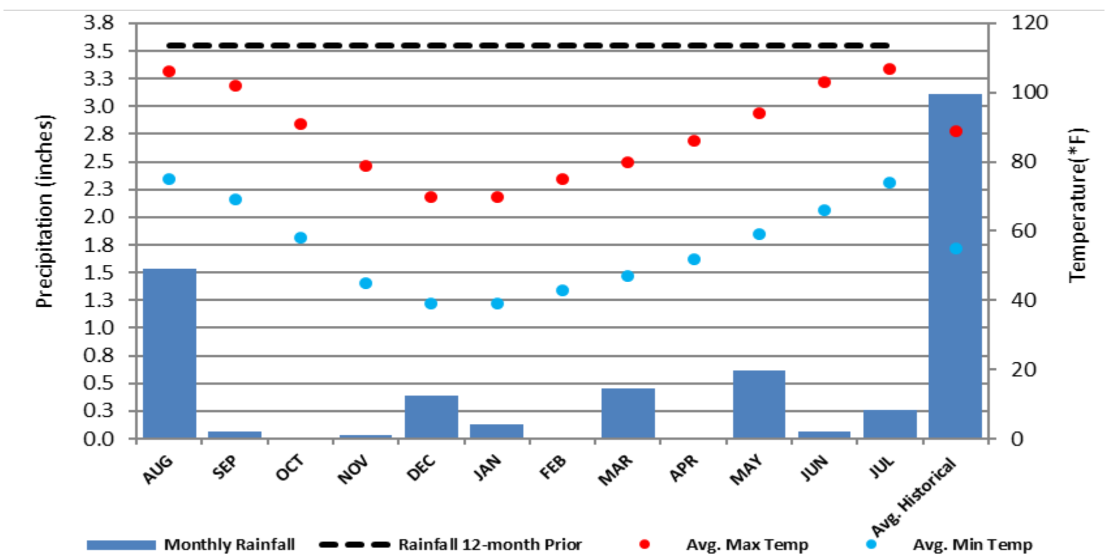


Fig 2-16: The total annual precipitation prior to the July 8, 2015 event measured 3.55 inches, which was slightly above the average annual precipitation of 3.11 inches, was insufficient to relieve the arid conditions existing in Imperial County. Meteorological data courtesy of Weather Underground, California Observed Climate Normals, and Western Regional Climate Center (WRCC) http://www.wrcc.dri.edu/cgi-bin/climain.pl?ca2713

The NWS explains that the speed of any wind resulting from a weather system is directly proportional to the change in air pressure, called a pressure gradient, such that when the pressure gradient increases so does the speed of the wind.[5] Because the pressure gradient is just the difference in pressure between high and low pressure areas, changes in weather patterns may recur seasonally.

Typically, high pressure brings clear skies and with no clouds, there is more incoming shortwave solar radiation causing temperatures to rise. When surface winds become light, the cooling of the air produced directly under a high-pressure system can lead to a buildup of particulates in urban areas under an elongated region of relatively high atmospheric pressure or ridge causing widespread haze. Conversely, a trough is an elongated region of relatively low atmospheric pressure often associated with fronts. Troughs may be at the surface, or aloft under various conditions. Most troughs bring clouds, showers, and a wind shift, particularly following the passage of the trough.

While windblown dust events in Imperial County during the summer monsoon season are often due to outflow winds from thunderstorms, windblown dust events in the fall, winter, and spring are usually due to strong winds associated with low-pressure systems and cold fronts moving southeast across California. These winds are the result of strong surface pressure gradients between the approaching low-pressure system, accompanying cold front, and higher pressure ahead of it. As the low-pressure system and cold front approaches and passes, gusty southwesterly winds typically shift to northwesterly causing variable west winds. These strong winds entrain dust into the atmosphere and transport it over long distances, especially when soils are arid.

II.3 Event Day Summary

The exceptional event for July 8, 2015, which was caused by an unseasonably deep upper-level trough of low pressure off the central California coast moved slowly inland bringing with it cool weather and an unusually deep marine layer for early July. The low was very strong for the time of year, early July. In any event, the deepening of the low led to the tightening of the surface gradient and a strong onshore flow resulting in gusty westerly winds across the mountains and deserts of southeast California. On July 8, 2015 strong gusty westerly winds swept across southeastern California as the system moved through the region affecting air quality and causing an exceedance at the Niland monitor.

Figures 2-17 through and 2-20 provide information regarding the expected movement of the upper-level low, the surface low across the region, and the tightening of the surface gradient and resulting gusty westerly winds.

[5] NWS JetStream – Origin of Wind http://www.srh.noaa.gov/jetstream/synoptic/wind.html

FIGURE 2-17
UPPER LEVEL 500MB HEIGHT MAP 1600 PST JULY 8, 2015

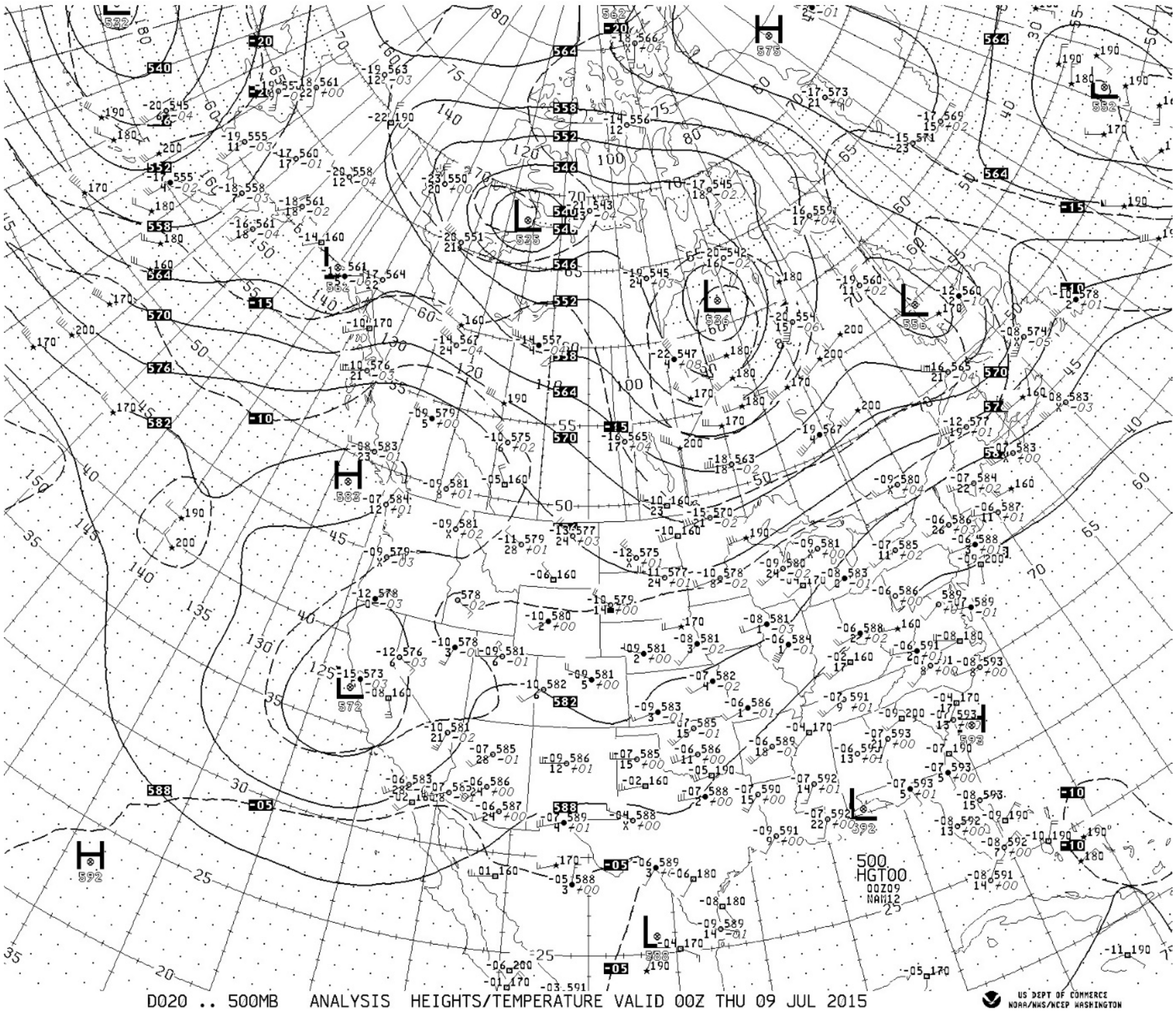
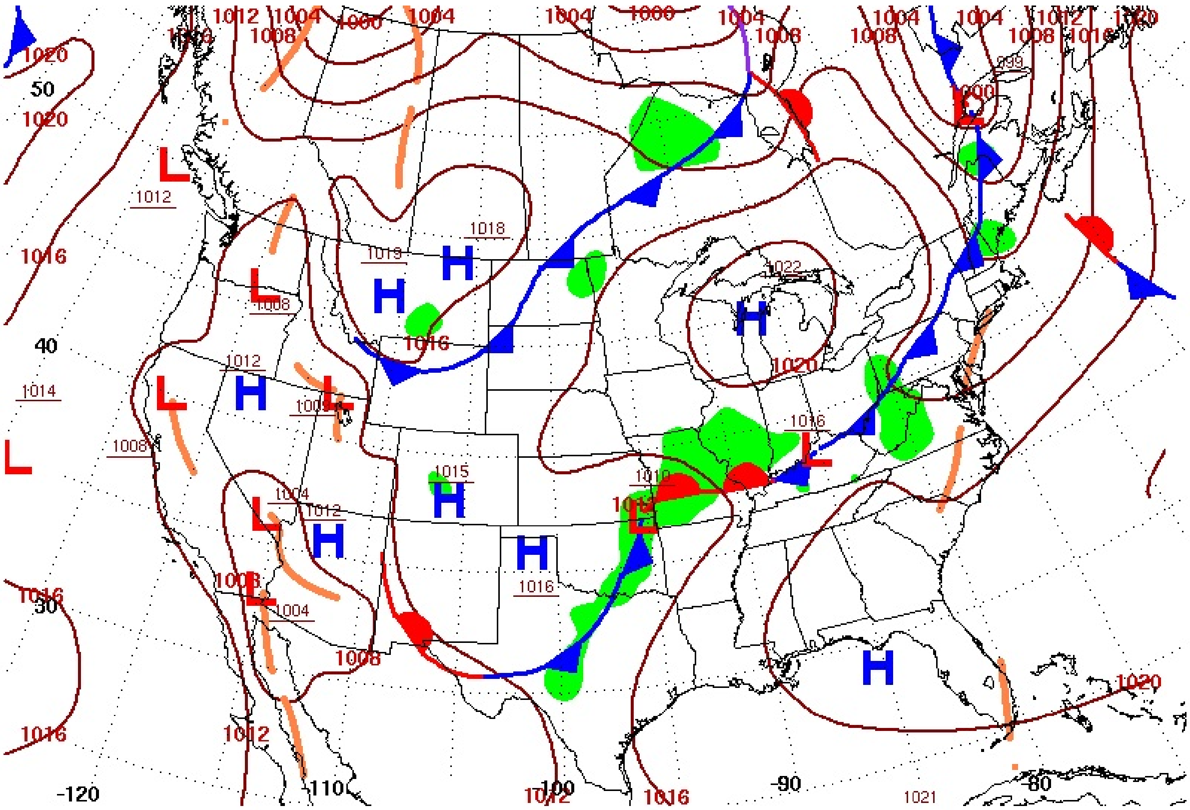


Fig 2-17: is an analysis image valid through 1600 PST July 8, 2015 which illustrates the movement of the upper-level low at the 500mb height from the Pacific over southern California. Source: http://archive.atmos.colostate.edu/data/misc/QHTA11/1507/15070901QHTA11.png

FIGURE 2-18
DAILY WEATHER MAP JULY 8, 2015



Surface Weather Map at 7:00 A.M. E.S.T.

Fig 2-18: A daily weather map for July 8, 2015 at 0400 PST depicts a surface low positioned across southeast California, southwest Arizona, and southern Nevada. Source: Weather Prediction Center
http://www.wpc.ncep.noaa.gov/dailywxmap/index_20150708.html

FIGURE 2-19
GOES-W VISIBLE SATELLITE IMAGE JULY 8, 2015

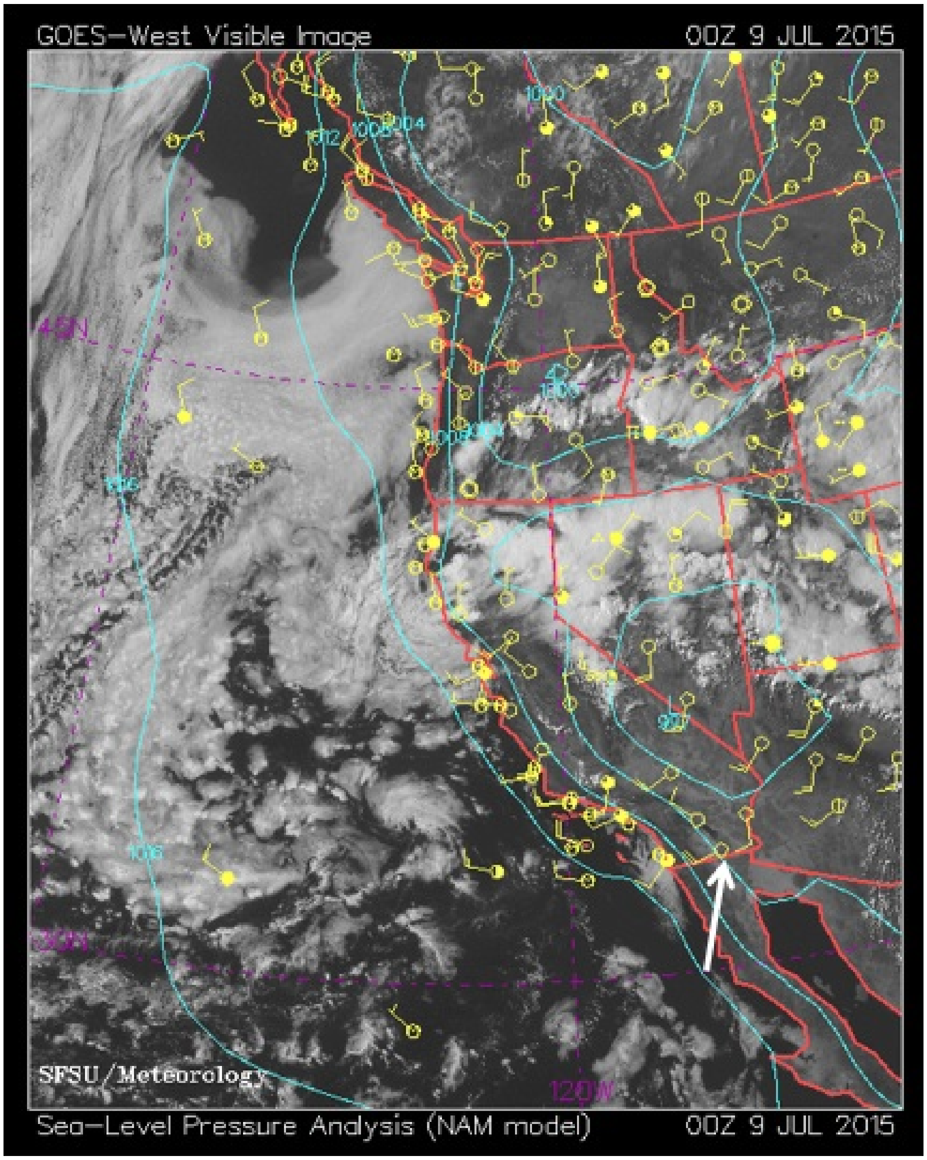


Fig 2-19: A GOES-W visible satellite image captured at 1600 PST on July 8, 2015 depicts a slight packing of the pressure gradients. Winds barbs (white arrow) indicate southwest winds of ~23 mph. The image is consistent with the advisory level winds across southeastern California, particularly in Imperial County and the San Diego County deserts. Courtesy of the SFSU Department of Earth and Climate Sciences and the California Regional Weather Server;
http://squall.sfsu.edu/crws/archive/wcsathts_arch.html

FIGURE 2-20
NEXRAD BASE VELOCITY

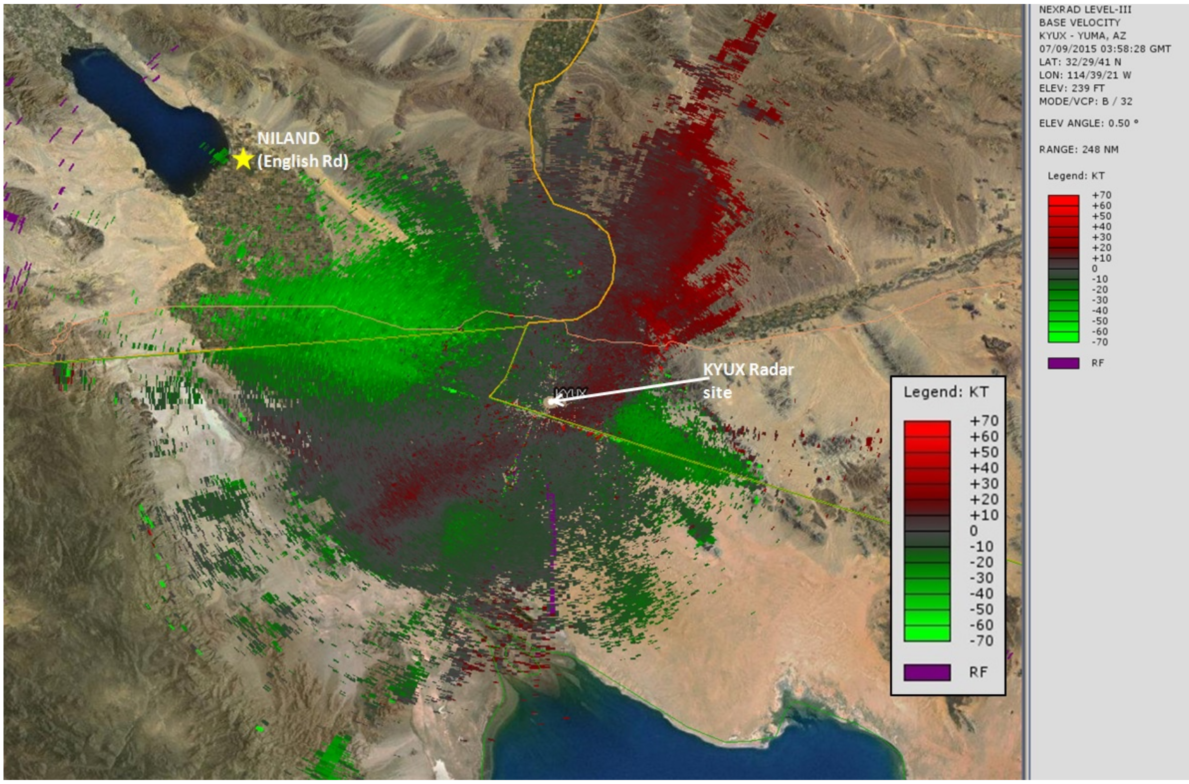


Fig 2-20: A base velocity image captured by the Yuma, Arizona, NEXRAD station at 1958 PST on July 8, 2015. Green colors represent movement toward the radar site. Red indicates movement away from the radar. Brighter colors, either red or green indicate stronger winds. NEXRAD data is available only for the extreme southeastern corner of Imperial County. However, this does provide an approximation of the wind velocity in the area. Dynamically generated through NOAA's Weather and Climate Toolkit

The NWS began identifying an anomalously deep low pressure moving slowly inland over central California as early as July 6, 2015. Both the San Diego and Phoenix NWS offices explained that the monsoonal flow pattern was winding down creating a much drier airmass for the week of July 6, 2015. Specifically, a dry southwest flow was ahead of the low pressure off the California coast that was moving slowly inland creating a wind pattern resembling the spring season. Wind patterns consisted of elevated winds during the afternoon and evening hours with brief early to mid-morning hours of lower wind speeds. By July 8, 2015, both the Phoenix and San Diego NWS offices identified a small, strong and deep trough expected to bring cool weather, an unusually deep marine layer with light rain and drizzle for the next two evenings and winds in the mountains and deserts each afternoon.

In total, four Urgent Weather messages were issued which included wind advisories for Imperial County and the mountain and passes located west and northwest of Imperial County. The wind advisories, effective through Thursday July 9, 2015 identified the strongest winds, 20 to 30 mph with potential gusts in excess of 40 mph, during the afternoon and evening hours. Impacts included lowered visibility due to blowing dust and sand and strong cross winds along the Interstate 8 (In Ko Pah corridor) and Interstate 10. On July 8, 2015, the pressure gradient tightened creating strong winds, which blew into southeastern California and Imperial County affecting air quality and causing an exceedance of the NAAQS. **Figure 2-21** is a graphical illustration of the chain of events for July 8, 2015.

FIGURE 2-21
RAMP UP ANALYSIS JULY 8, 2015

Fig 2-21: The wind pattern for July 8, 2015 resembled the spring season pattern where winds are strongest typically during the afternoon to evening hours. On July 8, 2015, winds remained moderate during the morning hours followed by elevated winds and gusts during the afternoon and evening hours. Wind data from the NCEI's QCLCD system and the University of Utah's MesoWest and the EPA's AQS databank. Air quality data from the EPA's AQS data bank. Google Earth base map

As wind speeds increased so did concentrations of PM_{10}. **Table 2-2** contains a summary of maximum winds, peak wind gusts, and wind direction at monitors in Imperial County, eastern

Riverside County, Yuma County, Arizona, and Mexicali. For detailed meteorological station, graphs see **Appendix B**.

TABLE 2-2
WIND SPEEDS ON JULY 8, 2015

Station Monitor Airport Meteorological Data	Maximum Wind Speed (WS) (mph)	Wind Direction during Max WS (degrees)	*Time of Max Wind Speed	24 hr Maximum Wind Gust (WG) (mph)	Time of Max WG	PM_{10} correlated to time of Max Wind Speed Nlnd	Brly
IMPERIAL COUNTY							
Imperial Airport (KIPL)	26	250	1653	39	2053	237	270
Naval Air Facility (KNJK)	36	240	1756	41	1756	332	383
Calexico (Ethel St)	17.4	284	1600	-	-	237	270
El Centro (9th Street)	14.9	258	1800	-	-	541	521
Niland (English Rd)	25.3	247	1900	-	-	534	458
Westmorland	13	209	1400	-	-	15	101
RIVERSIDE COUNTY							
Blythe Airport (KBLH)	20	180	1152	28	1252	21	46
Palm Springs Airport (KPSP)	25	330	1453	36	1453	15	101
Jacqueline Cochran Regional Airport (KTRM) - Thermal	23	340	2052	31	2252	442	377
ARIZONA - YUMA							
Yuma MCAS (KNYL)	14	260	1557	18	1257	86	224
MEXICALI - MEXICO							
Mexicali Int. Airport (MXL)	23	270	1800	-	-	541	521

*All time is in PST unless otherwise stated

National Oceanic and Atmospheric Administration (NOAA) Air Resources Laboratory HYSPLIT back trajectory model,[6] depicted in **Figures 2-22 and 2-23**, indicates the path of the airflow 24 hours prior to the hour of the morning and afternoon measured peak concentration for Niland (0800 and 1800 PST) on July 8, 2015. Please note that many times surface wind data does not reflect all of the upper-air influences that occur. The following analysis is a case in point. Surface wind data within Imperial County is not capturing all the meteorological influences at higher elevations.

As mentioned above, the July 8, 2015 wind pattern resembled that of a spring season pattern and not a monsoonal pattern. The week, including Monday, July 6, 2015, prior to the July 8, 2015 event monsoonal systems affected the northwest region along the San Bernardino Mountains,

[6] The Hybrid Single Particle Lagrangian Integrated Trajectory Model (**HYSPLIT**) is a computer model that is a complete system for computing simple air parcel trajectories to complex dispersion and deposition simulations. It is currently used to compute air parcel trajectories and dispersion or deposition of atmospheric pollutants. One popular use of HYSPLIT is to establish whether high levels of air pollution at one location are caused by transport of air contaminants from another location. HYSPLIT's back trajectories, combined with satellite images (for example, from NASA's MODIS satellites), can provide insight into whether high air pollution levels are caused by local air pollution sources or whether an air pollution problem was blown in on the wind The initial development was a result of a joint effort between NOAA and Australia's Bureau of Meteorology. Source: NOAA/Air Resources Laboratory, 2011.

along the higher deserts and along the western portion of Arizona. The San Diego NWS office discussed the thunderstorms that erupted the afternoon of July 6, 2015 in its area forecast issued at 0755pm July 6, 2015. The Phoenix NWS issued storm reports as early as July 6, 2015 indicating that storms were moving east and southeast into areas such as Wittmann and Gila Bend. In both cases flooding, mud, ash and debris were issues of concern. The occurrence of the thunderstorm activity allowed for areas within southeastern Riverside County and portions of western Arizona to have disturbed surface areas. It is of some importance to note that temperatures remained at heat advisory levels throughout the southeastern areas of California. Finally, the NWS advised that a dry southwest flow aloft would be dominating the area preceding the low-pressure system as it moved inland into California. Therefore, the monsoonal activity, preceding the July 8, 2015 event, and the dry conditions would have created ideal surface conditions within the southeastern portion of Riverside County to affect the Niland monitor that the Brawley monitor would not experience.

Unlike, the Imperial County Airport (KIPL), moderate variable winds (SSE, SE, S, WSW, SSW, W, WNW), prevailed during the evening hours of July 7, 2015 and the morning hours of July 8, 2015 while a predominantly west-southwest wind prevailed during the afternoon and evening hours of July 8, 2015 at the Niland monitor. At KIPL, moderately gusty west winds prevailed during the evening hours of July 7, 2015 and the morning hours of July 8, 2015 while a predominantly west-southwest wind prevailed during the afternoon and evening hours of July 8, 2015.

As areas to the north of Imperial County dried, albeit under cooler temperatures, moisture levels dropped significantly aloft, sufficient to provide for transport of dust particles, primarily at the higher elevations. Wind speeds during the evening of July 7, 2015 and the morning hours of July 8, 2015 were sufficient to affect the Niland monitor causing elevated concentrations through the 0800am hour of July 8, 2015, which did not occur at the Brawley monitor. **Figure 2-22**, provides an illustration of the path of the airflow that would have had an influence on the level of windblown dust affecting the Niland and Brawley monitors. Note that despite the moderate variable winds measured at the Niland monitor, there is an influence from areas in Riverside County. The Jacqueline Cochran (Desert Resorts) airport, north of Niland, measured moderately stronger winds than the Niland monitor from a north, northwest direction as did the Mecca (Oasis) station, and Bombay Beach.[7]

Similarly, during the afternoon and evening hours of July 8, 2015, which measured the highest wind speeds and gusts (**Figure 2-23**), winds blew through the mountain passes and desert slopes within San Diego County entraining windblown PM_{10} across the desert floor and agricultural lands within Imperial County affecting the Niland and Brawley monitors. It is of some worth to point out that from time to time modeled winds differ from local conditions. Data used in the HYSPLIT model has a horizontal resolution of 12 km and integrated every three hours. Thus, the HYSPLIT model may differ from local observed surface wind speeds and directions.

[7] The Mecca, Oasis station, similarly measured north, northwest and west, northwest winds during the same hours. **Appendix B** contains station metadata and additional tables. There is a clear pattern showing a northwest influence from stations located west-northwest of Niland and north of Niland.

FIGURE 2-22
HYSPLIT MODEL AM HOURS JULY 8, 2015

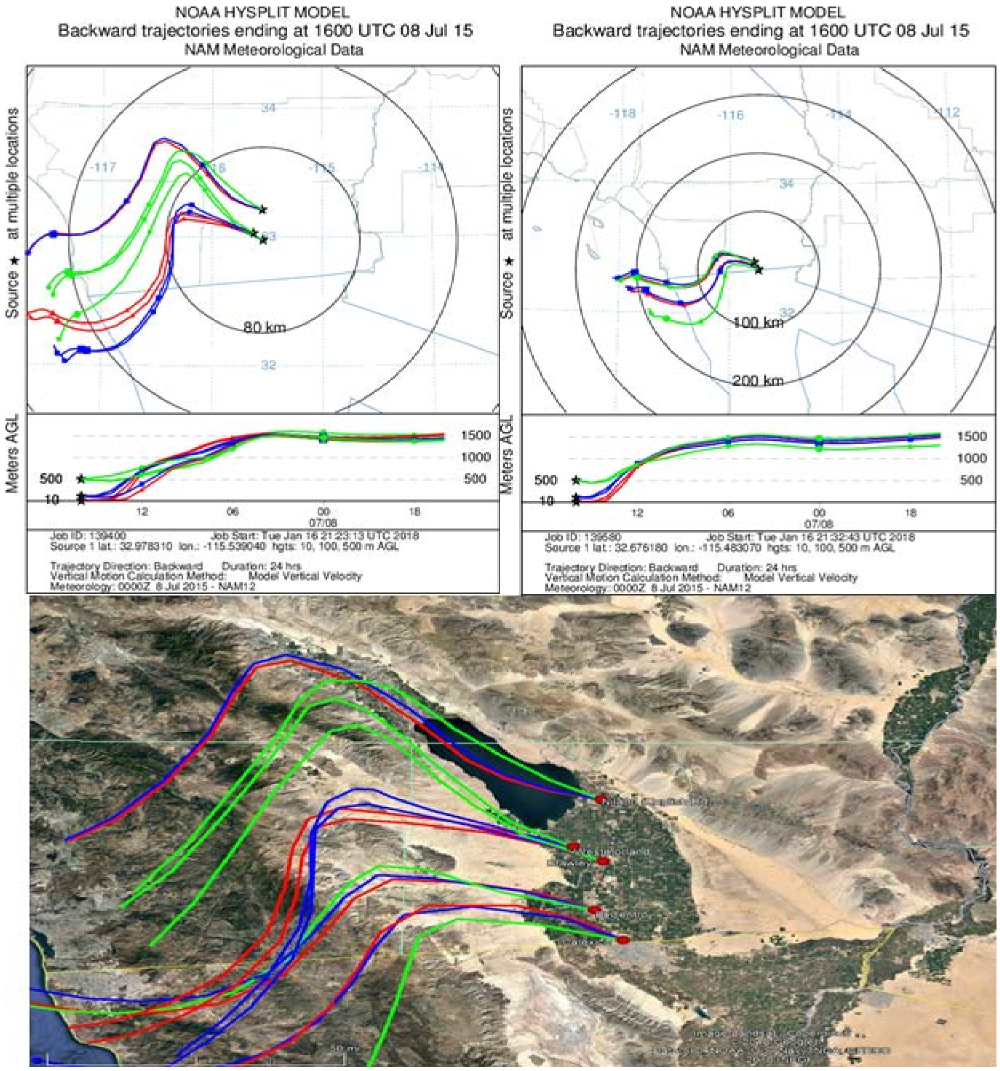


Fig 2-22: The Niland 24-hour back trajectory ending at 0800 PST on July 8, 2015. This was during the hour when Niland measured the peak PM_{10} concentration during the morning hours. Bottom image is the same trajectory but displayed on a base map. Red line indicates airflow at the 10 meters AGL (above ground level); blue indicates airflow at 100 meters AGL; green indicates airflow at 500 AGL. Generated through NOAA's Air Resources Laboratory

FIGURE 2-23
HYSPLIT MODEL PM HOURS JULY 8, 2015

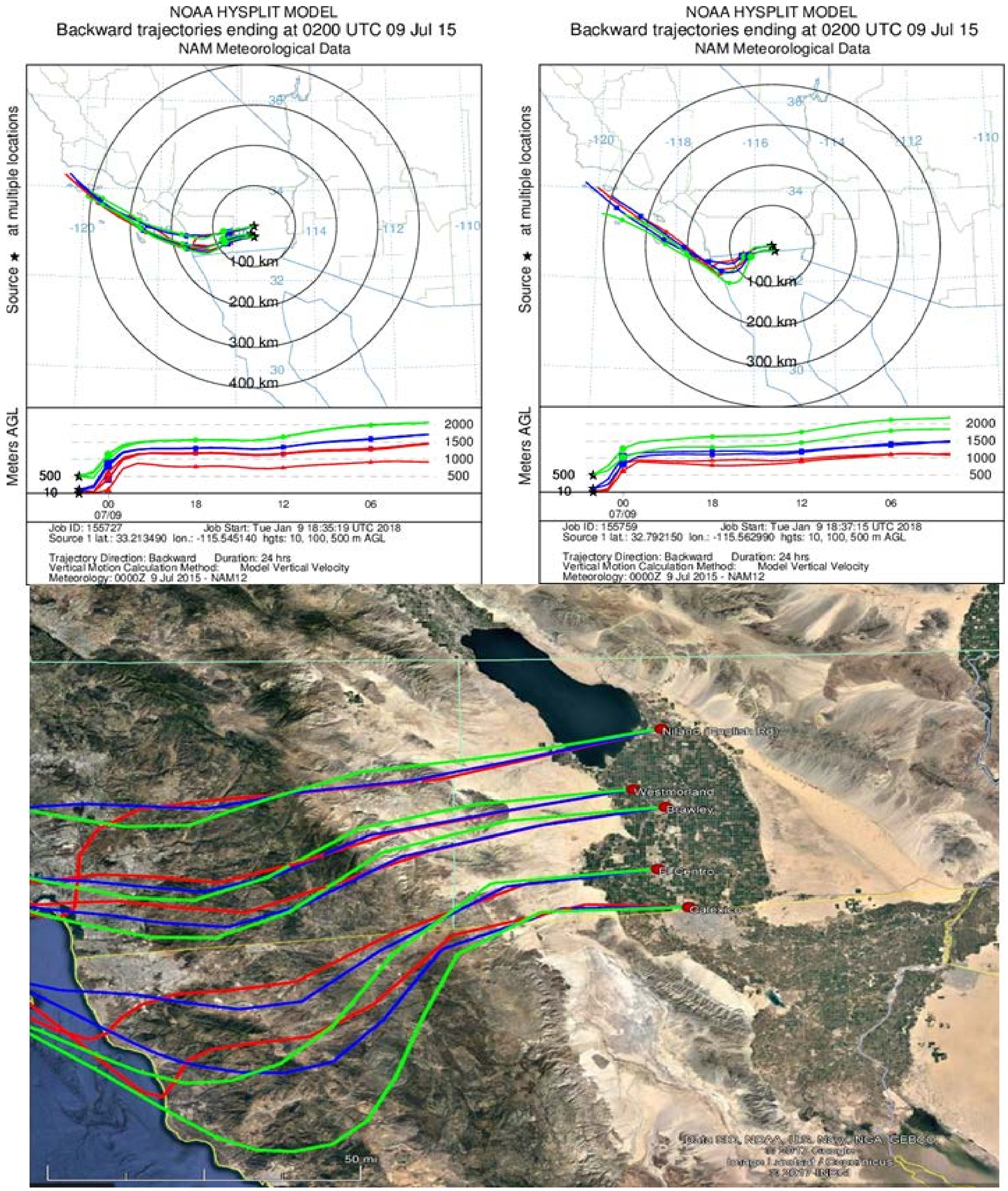


Fig 2-23: The Niland 24-hour back trajectory ending at 1800 PST on July 8, 2015. This was during the hour when Niland began to measure elevated levels of PM_{10} concentrations during the afternoon hours. The bottom image is the same trajectory but with a base map. Red line indicates airflow at the 10 meters AGL (above ground level); blue indicates airflow at 100 meters AGL; green indicates airflow at 500 AGL. Generated through NOAA's Air Resources Laboratory

Figures 2-24 and 2-25 illustrate the elevated levels of PM_{10} concentrations measured in Riverside, Imperial, and Yuma counties along with wind speeds over a three-day period, July 7, 2015 through July 9, 2015. Although July 8, 2015 was not a scheduled run day, elevated emissions entrained into Imperial County affected the Brawley and Niland monitor when gusty westerly winds, associated with the passage of a low-pressure system, passed through southeast California on July 8, 2015. The Niland monitor measured the elevated concentrations for 8 hours the evening of July 7, 2015 and a total of 14 hours on July 8, 2015 coincident with measured wind speeds and gusts above 25 mph.

The resulting entrained dust and accompanying high winds from the system qualify this event as a "high wind dust event".[8] High wind dust events are considered natural events where the windblown dust is either from solely a natural source or from areas where anthropogenic sources of windblown dust are controlled with Best Available Control Measures (BACM). The following sections provide evidence that the July 8, 2015 high wind event qualifies as a natural event and that BACM was overwhelmed by the intensity of the meteorological event.

FIGURE 2-24
72 HOUR PM_{10} FLUCTUATIONS NEIGHBORING SITES

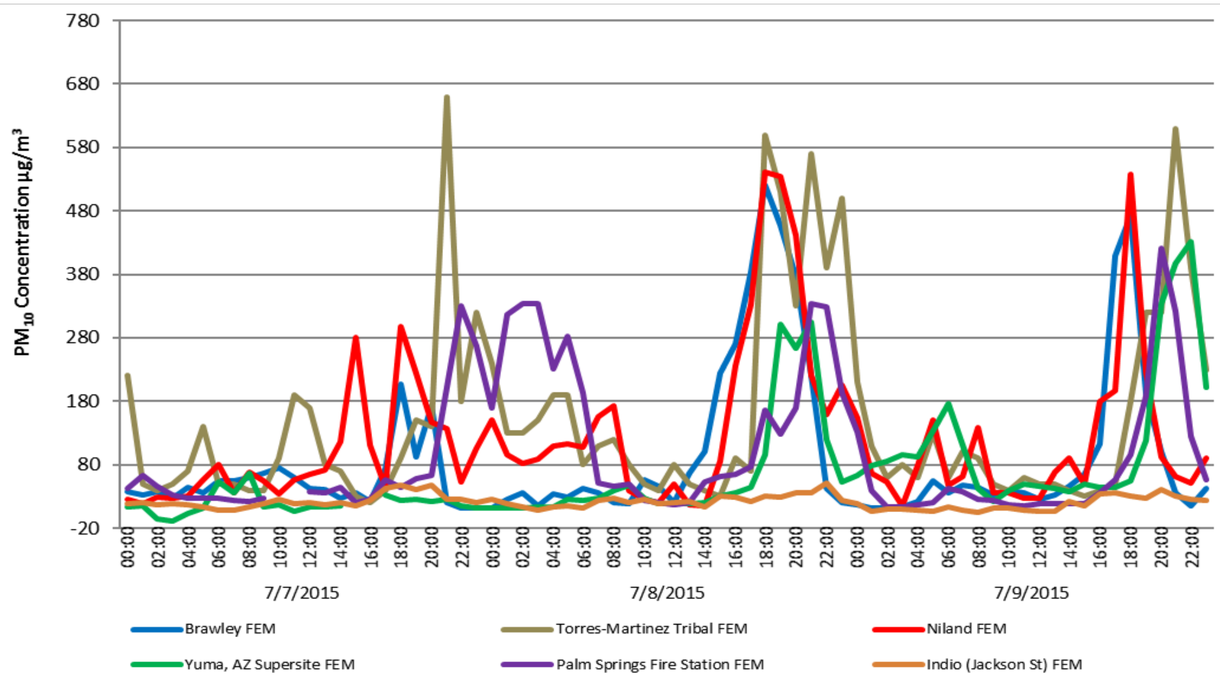


Fig 2-24: Is the graphical representation of the 72 hour relative PM_{10} concentrations at various monitoring locations throughout Riverside, Imperial, and Yuma counties. Gusty winds transported dust resulting in increased levels of PM_{10} at monitors in Imperial County. Yuma is MST. Air quality data from the EPA's AQS system

[8] Title 40 Code of Federal Regulations part 50: §50.1(p) High wind dust event is an event that includes the high-speed wind and the dust that the wind entrains and transports to a monitoring site.

FIGURE 2-25
72 HOUR WIND SPEEDS LOCAL MONITORING SITES & REGIONAL AIRPORTS

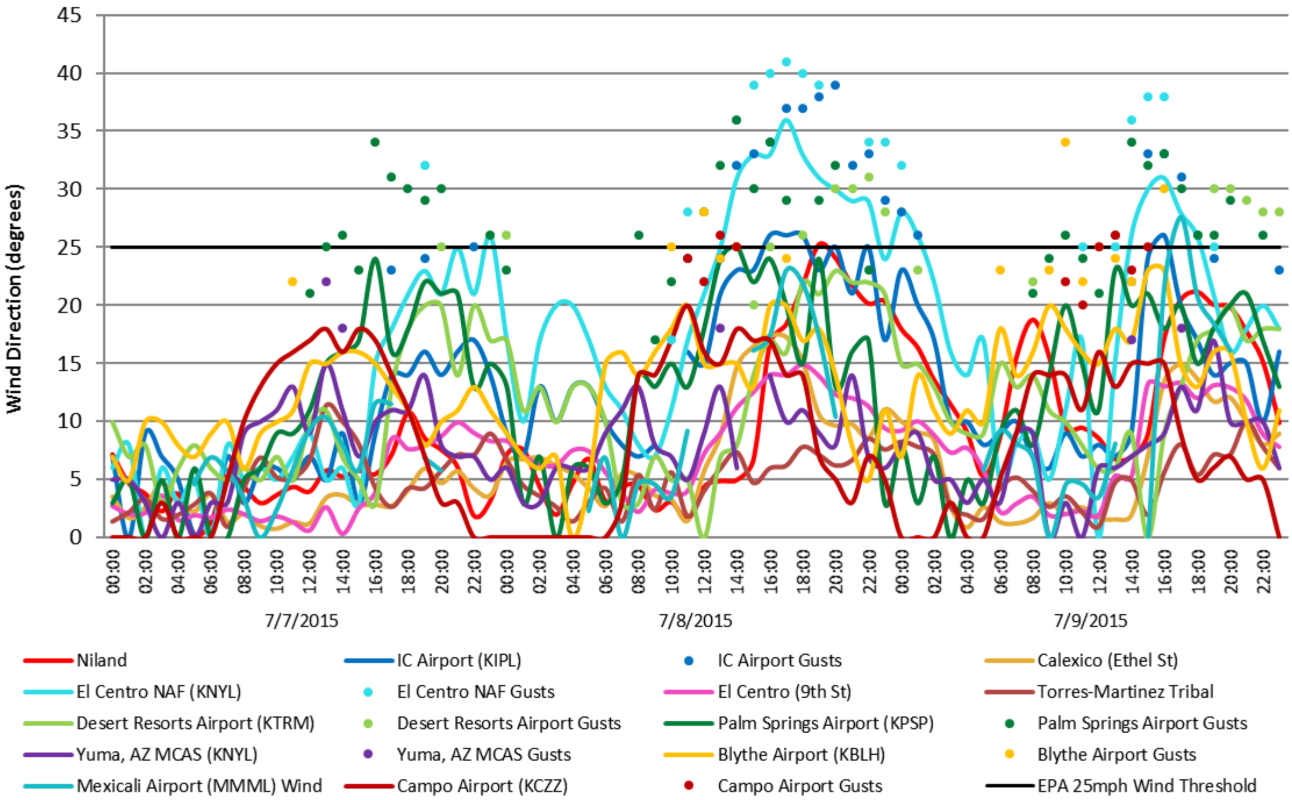


Fig 2-25: Meteorological data collected from sites within Imperial, Riverside, San Diego and Yuma counties, plus Mexicali, Mexico over a 3-day period from July 7, 2015 to July 9, 2015 shows a uniform spike in wind speed during the July 8, 2015 exceptional event. Yuma is MST. See Appendix B for individual station graphs

III Historical Concentrations

III.1 Analysis

While naturally occurring high wind events may recur seasonally and at times frequently and qualify for exclusion under the EER, historical comparisons of the particulate concentrations and associated winds provide insight into the frequency of events within an identified area. The following time series plots illustrate that PM_{10} concentrations measured at the Niland monitor on July 8, 2015, compared to non-event and event days demonstrates the variability over several years and seasons. The analysis also provides supporting evidence that there exists a clear causal relationship between the July 8, 2015 high wind event and the exceedance measured at the Niland monitor.

Figures 3-1 and 3-2 show the time series of available FRM and BAM 24-hr PM_{10} concentrations at the Niland monitor for the period of January 1, 2010 through July 8, 2015. Note that prior to 2013, BAM data was not FEM therefore, not reported into AQS.[9] Properly establishing the variability of the event as it occurred on July 8, 2015, 24-hour averaged PM_{10} concentrations between January 1, 2010 and July 8, 2015 were compiled and plotted as a time series. All figures illustrate that the exceedance, which occurred on July 8, 2015, were outside the normal historical concentrations when compared to event and non-event days. Air quality data for all graphs obtained through the EPA's AQS data bank.

[9] Pollutant concentration data contained in EPA's Air Quality System (AQS) are required to be reported in units corrected to standard temperature and pressure (25 C, 760 mm Hg). Because the PM_{10} concentrations prior to 2013 were not reported into the AQS database all BAM (FEM) data prior to 2013 within this report are expressed as micrograms per cubic meter (mg/m3) at local temperature and pressure (LTP) as opposed to standard temperature and pressure (STP, 760 torr and 25 C). The difference in concentration measurements between standard conditions and local conditions is insignificant and does not alter or cause any significant changes in conclusions to comparisons of PM_{10} concentrations to PM_{10} concentrations with in this demonstration.

FIGURE 3-1
NILAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24 HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO JULY 8, 2015

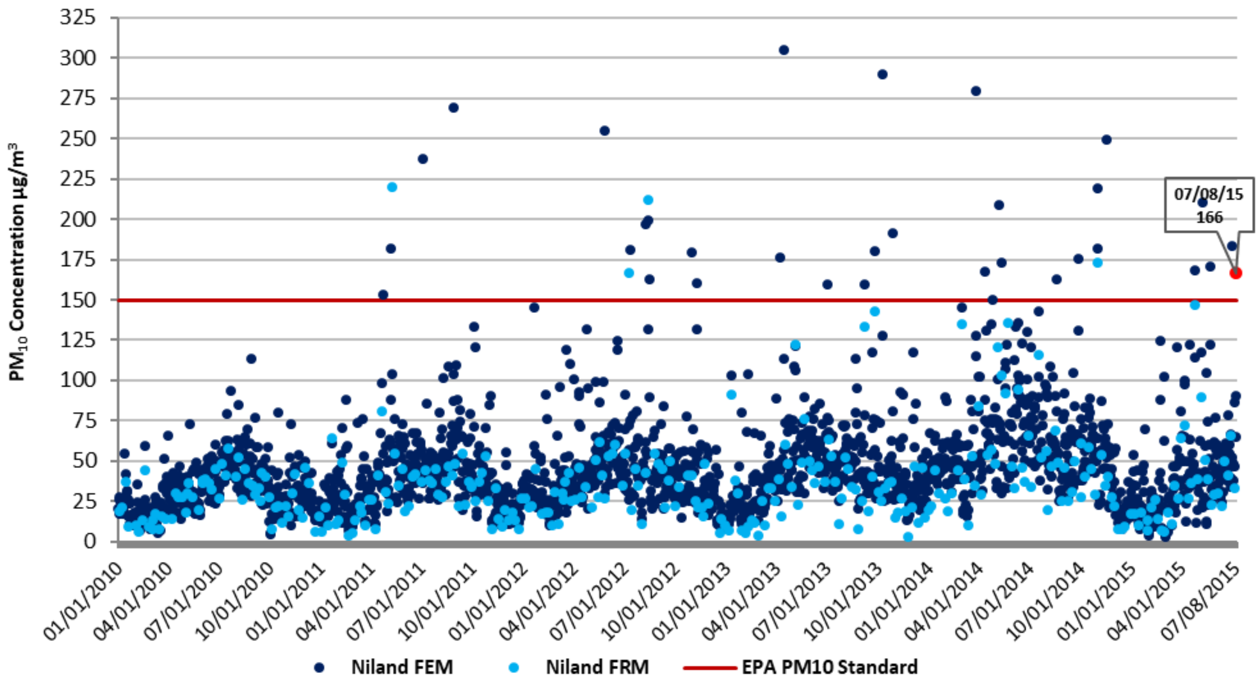
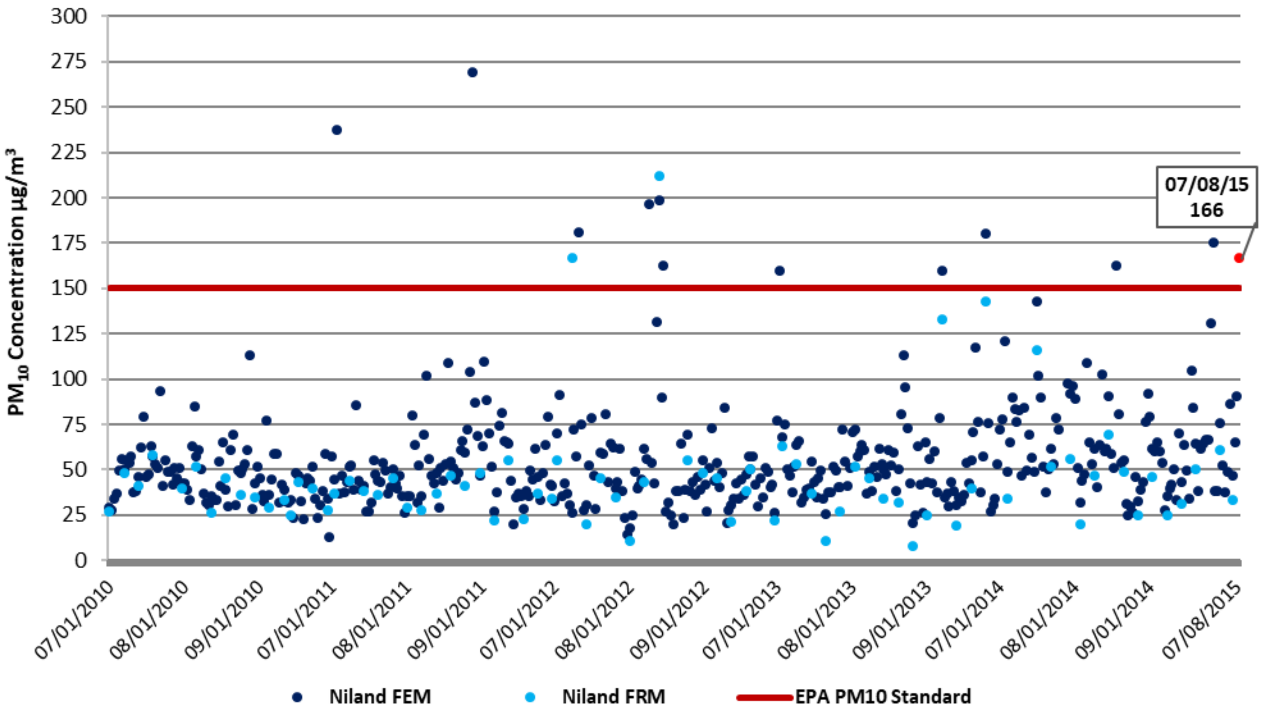


Fig 3-1: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 166 µg/m^3 on July 8, 2015 by the Niland monitor was outside the normal historical concentrations when compared to similar event days and non-event days. Of the 2015 sampling days there were 33 exceedance days which is less than a 2.0% occurrence rate

The time series, **Figures 3-1 thru 3-2** for Niland included 2,330 credible samples measured between January 1, 2010 and July 8, 2015 or a total 2015 sampling days.

Overall, the time series illustrates that the Niland monitor, measured 33 exceedance days out of the 2,015 sampling days, which is less than a 2% occurrence rate. Of the 33 exceedance days, 13 exceedance days occurred during the third quarter (July – September). The remaining 20 exceedance days occurred during the first, second and fourth quarters. The July 8, 2015 concentration is outside the normal historical measurements for the second quarter. No exceedances of the standard occurred during 2010. As mentioned above, FEM BAM data was not regulatory from 2010 to 2012.

FIGURE 3-2
NILAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24 HR AVG CONCENTRATIONS
***JULY 1, 2010 THROUGH JULY 8, 2015**



***Quarterly: July 1, 2010 to September 30, 2014 and July 1, 2015 to July 8, 2015**

Fig 3-2: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentration of 166 µg/m^3 by the Niland monitor on July 8, 2015 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 3-2 displays the seasonal fluctuation over 468 sampling days at the Niland monitor for third quarter (July to September) between 2010 and 2015. The Niland monitor measured 541 credible samples over 468 sampling days. Of the 468 sampling days, there were 13 measured exceedance days, which equates to less than a 3.0% occurrence rate. The July 8, 2015 measured concentration at the Niland monitor was outside the normal historical and seasonal concentrations when compared to both event days and non-event days.

FIGURE 3-3
NILAND HISTORICAL
FRM AND FEM PM_{10} 24 HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO JULY 8, 2015

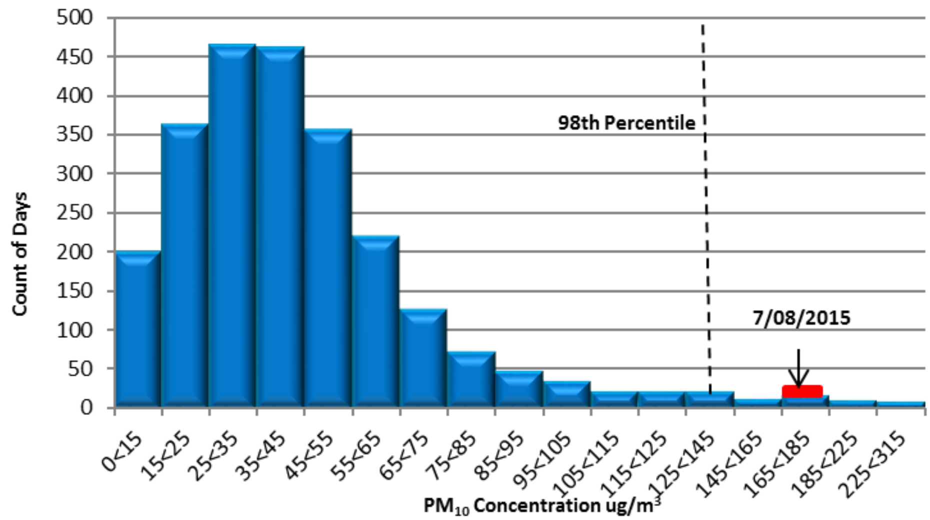
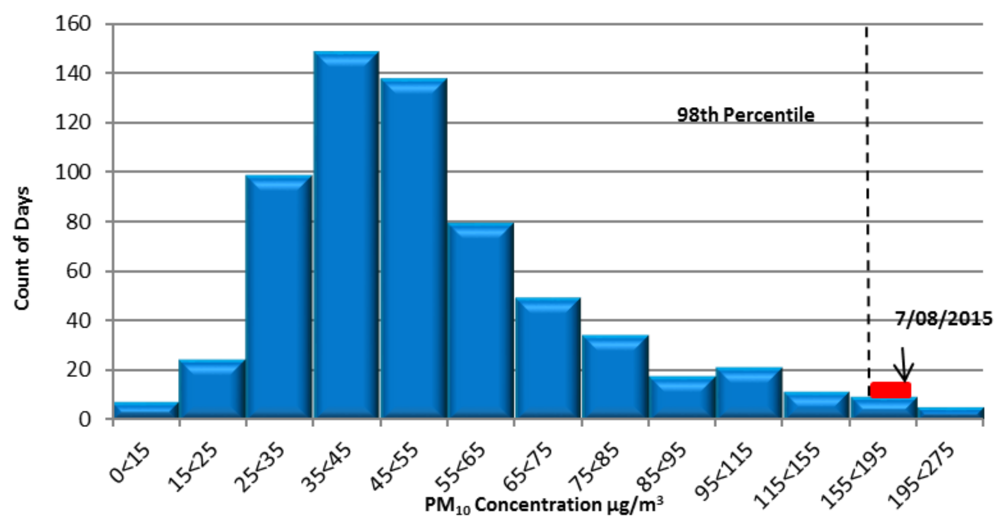


Fig 3-3: The 24-hr average PM_{10} concentration measured at Niland monitor demonstrates that the July 8, 2015 event was above the 98th percentile

FIGURE 3-4
NILAND SEASONAL
FRM AND FEM PM_{10} 24 HR AVG CONCENTRATIONS
***JULY 1, 2010 THROUGH JULY 8, 2015**



***July 1, 2010 to September 30, 2014 and July 1, 2015 to July 8, 2015**

Fig 3-4: The 24-hr average PM_{10} concentration at the Niland monitor demonstrates that the July 8, 2015 event was above the 98th percentile

For the combined FRM and FEM data sets for the Niland monitor the annual historical and the seasonal historical PM_{10} concentration of 166 µg/m^3 both are above the 98th percentile rank. Looking at the annual time series concentrations, the seasonal time series concentrations and the percentile rankings for both the historical and seasonal patterns the July 8, 2015 measured exceedance is clearly outside the normal concentration levels when comparing to non-event days and event days.

III.2 Summary

The information provided, above, by the time series plots, seasonal time series plots, and the percentile rankings illustrate that the PM_{10} concentration observed on July 8, 2015 occurs infrequently. When comparing the measured PM_{10} level on July 8, 2015 and following USEPA EER guidance, this demonstration provides supporting evidence that the measured exceedance measured at the Niland monitor was outside the normal historical and seasonal historical concentration levels.

The historical concentration analysis provided here supports the determination that the July 8, 2015 natural event affected the concentrations levels at the Niland monitor causing an exceedance. The concentration analysis further supports that the natural event affected air quality in such a way that there exists a clear causal relationship between the measured exceedance on July 8, 2015 and the natural event, qualifying the natural event as an Exceptional Event.

IV Not Reasonably Controllable or Preventable

According to the October 3, 2016 promulgated revision to the Exceptional Event (EE) rule under 40 CFR §50.14(b)(8) air agencies must address the “not reasonably controllable or preventable” (nRCP) criterion as two prongs. In order to properly address the nRCP criterion the ICAPCD must not only identify the natural and anthropogenic sources of emissions causing and contributing to the monitored exceedance but must identify the relevant State Implementation Plan (SIP) measures and/or other enforceable control measures in place for the identified sources. An effective analysis of the nRCP must include the implementation status of the control measures in order to properly consider the measures as enforceable. USEPA considers control measures enforceable if approved into the SIP within 5 years of an EE demonstration submittal. The identified control measures must address those specific sources that are identified as causing or contributing to a monitored exceedance.

The final EE rule revision explains that an event is considered not reasonably controllable if reasonable measures to control the impact of the event on air quality were applied at the time of the event. Similarly, an event is considered not reasonably preventable if reasonable measures to prevent the event were applied at the time of the event. However, for “high wind events” when PM_{10} concentrations are due to dust raised by high winds from desert areas whose sources are controlled with Best Available Control Measures (BACM) then the event is a “natural event” where human activity plays little or no direct causal role and thus is considered not preventable.

This section begins by providing background information on all SIP and other enforceable control measures in force during the EE for July 8, 2015. In addition, this July 8, 2015 demonstration provides technical and non-technical evidence that strong gusty westerly winds blew across the mountains and deserts within southeastern California and into Imperial County suspending particulate matter affecting the Brawley and Niland monitors on July 8, 2015. This section identifies all natural and anthropogenic sources and provides regulatory evidence of the enforceability of the control measures in place during the July 8, 2015 EE.

IV.1 Background

Inhalable particulate matter (PM_{10}) contributes to effects that are harmful to human health and the environment, including premature mortality, aggravation of respiratory and cardiovascular disease, decreased lung function, visibility impairment, and damage to vegetation and ecosystems. Upon enactment of the 1990 Clean Air Act (CAA) amendments, Imperial County was classified as moderate nonattainment for the PM_{10} NAAQS under CAA sections 107(d)(4)(B) and 188(a). By November 15, 1991, such areas were required to develop and submit State Implementation Plan (SIP) revisions providing for, among other things, implementation of reasonably available control measures (RACM).

Partly to address the RACM requirement, ICAPCD adopted local Regulation VIII rules to control PM_{10} from sources of fugitive dust on October 10, 1994, and revised them on November 25,

1996. USEPA did not act on these versions of the rules with respect to the federally enforceable SIP.

On August 11, 2004, USEPA reclassified Imperial County as a serious nonattainment area for PM_{10}. As a result, CAA section 189(b)(1)(B) required all BACM to be implemented in the area within four years of the effective date of the reclassification, i.e., by September 10, 2008.

On November 8, 2005, partly to address the BACM requirement, ICAPCD revised the Regulation VIII rules to strengthen fugitive dust requirements. On July 8, 2010, USEPA finalized a limited approval of the 2005 version of Regulation VIII, finding that the seven Regulation VIII rules largely fulfilled the relevant CAA requirements. Simultaneously, USEPA also finalized a limited disapproval of several of the rules, identifying specific deficiencies that needed to be addressed to fully demonstrate compliance with CAA requirements regarding BACM and enforceability.

In September 2010, ICAPCD and the California Department of Parks and Recreation (DPR) filed petitions with the Ninth Circuit Federal Court of Appeals for review of USEPA's limited disapproval of the rules. After hearing oral argument on February 15, 2012, the Ninth Circuit directed the parties to consider mediation before rendering a decision on the litigation. On July 27, 2012, ICAPCD, DPR and USEPA reached agreement on a resolution to the dispute which included a set of specific revisions to Regulation VIII. These revisions are reflected in the version of Regulation VIII adopted by ICAPCD on October 16, 2012 and approved by USEPA April 22, 2013. Since 2006 ICAPCD had implemented regulatory measures to control emissions from fugitive dust sources and open burning in Imperial County.

FIGURE 4-1
REGULATION VIII GRAPHIC TIMELINE DEVELOPMENT

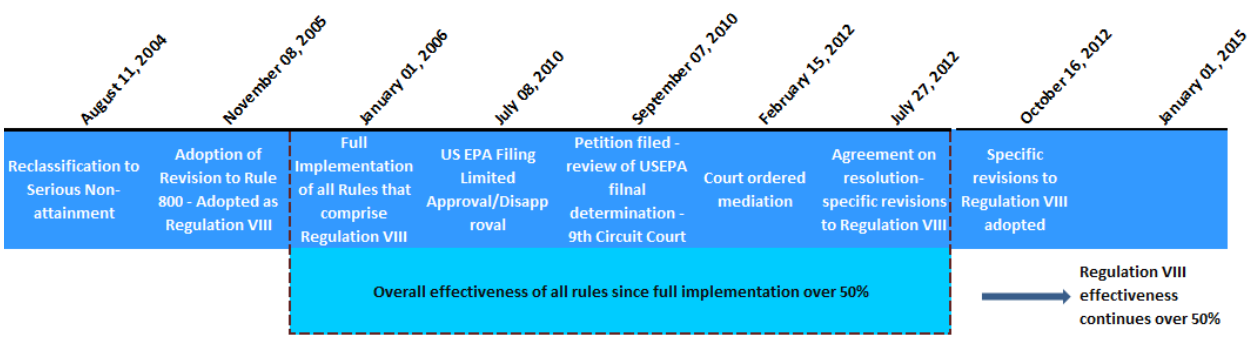


Fig 4-1: Regulation VIII Graphic Timeline

IV.1.a Control Measures

Below is a brief summary of Regulation VIII, which is comprised of seven fugitive dust rules. **Appendix D** contains a complete set of the Regulation VIII rules.

ICAPCD's Regulation VIII consists of seven interrelated rules designed to limit emissions of PM_{10} from anthropogenic fugitive dust sources in Imperial County.

Rule 800, General Requirements for Control of Fine Particulate Matter, provides definitions, a compliance schedule, exemptions and other requirements generally applicable to all seven rules. It requires the United States Bureau of Land Management (BLM), United States Border Patrol (BP) and DPR to submit dust control plans (DCP) to mitigate fugitive dust from areas and/or activities under their control. Appendices A and B within Rule 800 describe methods for determining compliance with opacity and surface stabilization requirements in Rules 801 through 806.

Rule 801, Construction and Earthmoving Activities, establishes a 20% opacity limit and control requirements for construction and earthmoving activities. Affected sources must submit a DCP and comply with other portions of Regulation VIII regarding bulk materials, carry-out and track-out, and paved and unpaved roads. The rule exempts single family homes and waives the 20% opacity limit in winds over 25 mph under certain conditions.

Rule 802, Bulk Materials, establishes a 20% opacity limit and other requirements to control dust from bulk material handling, storage, transport and hauling.

Rule 803, Carry-Out and Track-Out, establishes requirements to prevent and clean-up mud and dirt transported onto paved roads from unpaved roads and areas.

Rule 804, Open Areas, establishes a 20% opacity limit and requires land owners to prevent vehicular trespass and stabilize disturbed soil on open areas larger than 0.5 acres in urban areas, and larger than three acres in rural areas. Agricultural operations are exempted.

Rule 805, Paved and Unpaved Roads, establishes a 20% opacity limit and control requirements for unpaved haul and access roads, canal roads and traffic areas that meet certain size or traffic thresholds. It also prohibits construction of new unpaved roads in certain circumstances. Single-family residences and agricultural operations are exempted.

Rule 806, Conservation Management Practices, requires agricultural operation sites greater than 40 acres to implement at least one conservation management practice (CMP) for each of several activities that often generates dust at agricultural operations. In addition, agricultural operation sites must prepare a CMP plan describing how they comply with Rule 806, and must make the CMP plan available to the ICAPCD upon request.

IV.1.b Additional Measures

Imperial County Natural Events Action Plan (NEAP)

On August 2005, the ICAPCD adopted a NEAP for the Imperial County, as was required under the former USEPA Natural Events Policy, to address PM_{10} events by:

- Protecting public health;
- Educating the public about high wind events;

- Mitigating health impacts on the community during future events; and
- Identifying and implementing BACM measures for anthropogenic sources of windblown dust.

Smoke Management Plan (SMP) Summary

There are 35 Air Pollution Control Districts or Air Quality Management Districts in California which are required to implement a district-wide smoke management program. The regulatory basis for California's Smoke Management Program, codified under Title 17 of the California Code of Regulations is the "Smoke Management Guidelines for Agricultural and Prescribed Burning" (Guidelines). California's 1987 Guidelines were revised to improve interagency coordination, avoid smoke episodes, and provide continued public safety while providing adequate opportunity for necessary open burning. The revisions to the 1987 Guidelines were approved March 14, 2001. All air districts, with the exception of the San Joaquin Valley Air Pollution Control District (SJAPCD) were required to update their existing rules and Smoke Management Plans to conform to the most recent update to the Guidelines.

Section 80150 of Title 17 specifies the special requirements for open burning in agricultural operations, the growing of crops and the raising of fowl or animals. This section specifically requires the ICAPCD to have rules and regulations that require permits that contain requirements that minimize smoke impacts from agricultural burning.

On a daily basis, the ICAPCD reviews hourly surface meteorological reports from various airport agencies, the NWS, State fire agencies and CARB to help determine whether the day is a burn day. Using a four-quadrant map of Imperial County allowed burns are allocated in such a manner as to assure minimal to no smoke impacts safeguarding the public health. Finally, all permit holders are required to notice and advise members of the public of a potential burn. This noticing requirement is known as the Good Neighbor Policy. Because of the potential for high winds were forecast to take place during the late afternoon to evening hours, the ICAPCD made a decision to allow agricultural burning during the late morning and early afternoon hours on July 8, 2015 **(Appendix A).** No complaints were filed for agricultural burning on July 8, 2015.

IV.1.c Review of Source Permitted Inspections and Public Complaints

A query of the ICAPCD permit database was compiled and reviewed for active permitted sources throughout Imperial County and specifically around Niland during the July 8, 2015 PM_{10} exceedance. Both permitted and non-permitted sources are required to comply with Regulation VIII requirements that address fugitive dust emissions. The identified permitted sources are Aggregate Products, Inc., US Gypsum Quarry, Imperial Aggregates (Val-Rock, Inc., and Granite Construction), US Gypsum Plaster City, Clean Harbors (Laidlaw Environmental Services), Bullfrog Farms (Dairy), Burrtec Waste Industries, Border Patrol Inspection station, Centinela State Prison, various communications towers not listed and various agricultural operations. Non-permitted sources include the wind farm known as Ocotillo Express, and a solar facility known as CSolar IV

West. Finally, the desert regions are under the jurisdiction of the Bureau of Land Management and the California Department of Parks (Including Anza Borrego State Park and Ocotillo Wells). An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM_{10} emissions. July 8, 2015 was officially designated as a Burn day. No complaints were filed on July 8, 2015 related to agricultural or waste burning or dust.

FIGURE 4-2
PERMITTED SOURCES

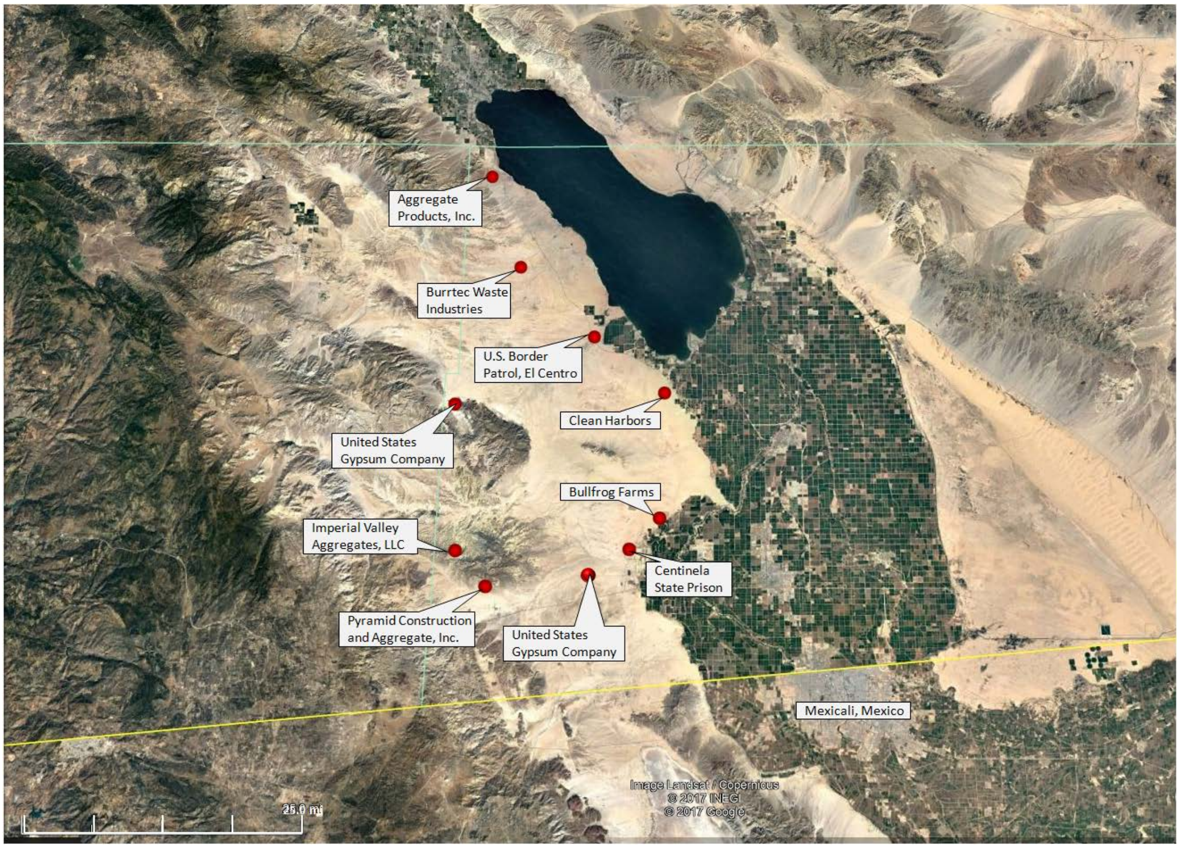


Fig 4-2: The above map identifies those permitted sources located west, northwest and southwest of the Niland monitor. The green line to the north denotes the political division between Imperial and Riverside counties. The yellow line below denotes the international border between the United States and Mexico. The green checker-boarded areas are a mixed use of agricultural and community parcels. In addition, either the Bureau of Land Management or the California Department of Parks manages the desert areas. Base map from Google Earth

FIGURE 4-3
NON-PERMITTED SOURCES

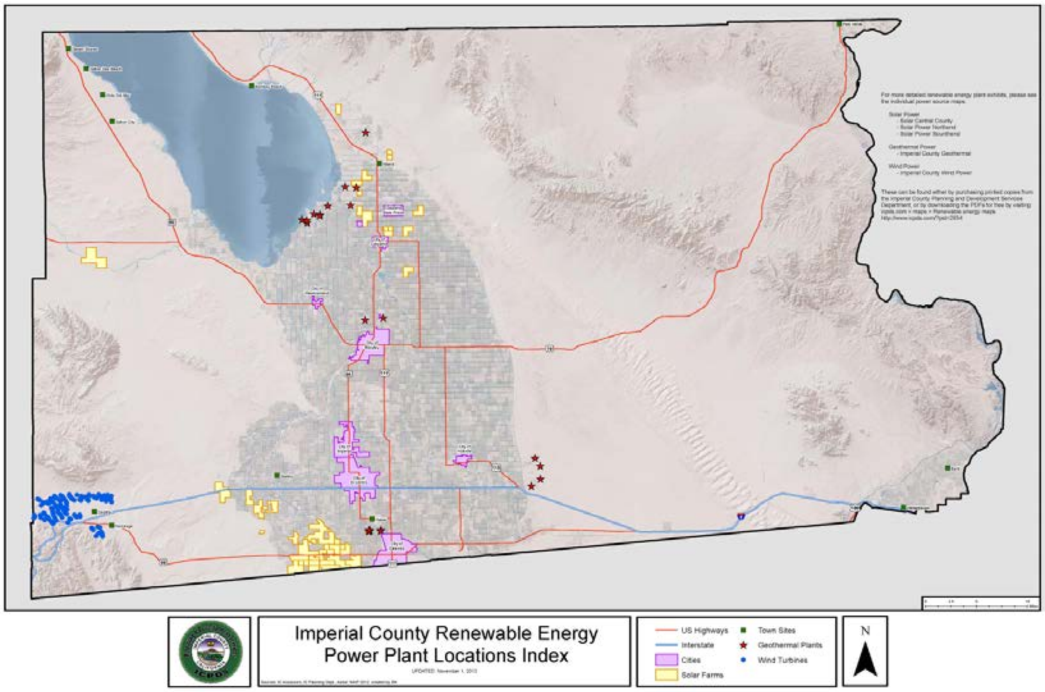


Fig 4-3: The above map identifies those power sources located west, northwest and southwest of the Niland monitor. Blue indicate the Wind Turbines, Yellow are the solar farms and stars are geothermal plants

IV.2 Forecasts and Warnings

As mentioned above in section II, the ICAPCD published via the web notifications by the Phoenix and San Diego NWS office advising the public of the potential for elevated particulate matter resulting from elevated winds in Imperial County. Similarly, the Imperial Valley Air Quality Forecast issued for July 7, 2015 and July 8, 2015 identified the upper-level trough of low pressure approaching and subsequently moving over California.[10] The notifications explained the enhancement of atmospheric mixing and the creation of moderate westerly winds resulting in blowing dust. In addition, the July 7, 2015 Imperial County forecasted Air Quality Index (AQI) of moderate or yellow for July 8, 2015 was subsequently affirmed on July 8, 2015.[11] The NWS issued

[10] The Imperial County Air Pollution Control District in collaboration with the California Air Resources Board supports the Imperial Valley Air website designed to educate and inform the citizenary of Imperial County regarding local air pollution and potential impacts. It allows for real time notifications and forecasts to allow individuals to make educated decisions regarding their daily activities that may impact their health. http://www.imperialvalleyair.org/index.cfm

[11] The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country. Source: https://airnow.gov/index.cfm?action=aqibasics.aqi

a weather forecast on July 8, 2015 for the all Imperial County warning of the potential for strong winds during the late afternoon and evening hours with sustained winds 15 to 25 mph and gust to 35 miles per hour (mph). Wind advisories were issued for Imperial County (specifically the southwestern portion) and the San Diego County deserts where gusts were expected to reach 60 mph with incidents of blowing dust and sand. **Appendix A** contains copies of the issued notices on July 8, 2015.

IV.3 Wind Observations

Wind data during the event was obtained from Palm Springs Airport (KPSP), Desert Resorts Regional Airport (a.k.a. Jacqueline Cochran-Thermal), Blythe Airport (KBLH) in Riverside County, the Marine Corps Air Station (MCAS) in Yuma, Arizona (KNYL), the Mexicali, Mexico Airport (MMML), along with Imperial County Airport (KIPL) and the El Centro Naval Air Facility (KNJK) in Imperial County. As mentioned above, throughout the afternoon and evening hours, the El Centro NAF measured sustained winds of up to 36 mph as well as measuring gusts winds of up to 41 mph. KIPL had winds of 26 mph and gusts up to 39 mph. See **Table 2-2** and **Appendix B** for individual station wind graphs. Wind speeds of over 25 mph are normally sufficient to overcome most PM_{10} control measures. During the July 8, 2015 event wind speeds were sustained above the 25 mph threshold overcoming the BACM in place.

IV.4 Summary

The weather and air quality forecasts and warnings outlined in this section demonstrate that an upper-level low off the coast of central California moved inland, generating strong westerly winds across southeastern California, including Imperial County, and caused uncontrollable PM_{10} emissions. The BACM list as part of the control measures in Imperial County for fugitive dust emissions were in place at the time of the event. These control measures are required for areas designated as "serious" non-attainment for PM_{10}, such as Imperial County. Thus, the BACM in place at the time of the event were beyond reasonable. In addition, surface wind measurements in the Niland and surrounding areas to the north and south of Niland during the event were high enough (at or above 25 mph, with wind gusts over 41 mph) that BACM PM_{10} control measures would have been overwhelmed.

Finally, a high wind dust event can be considered as a natural event, even when portions of the wind-driven emissions are anthropogenic, as long as those emissions have a clear causal relationship to the event and were determined to be not reasonably controllable or preventable. This demonstration has shown that the event that occurred on July 8, 2015 was not reasonably controllable or preventable despite the strong and in force BACM within the affected areas in Imperial County. This demonstration has similarly established a clear causal relationship between the exceedance and the high wind event timeline and geographic location. The July 8, 2015 event can be considered an exceptional event under the requirements of the exceptional event rule.

V Clear Causal Relationship

V.1 Discussion

Meteorological observations for July 8, 2015 identified an unseasonably deep upper-level trough of low pressure that moved over the region, resulting in a strong onshore flow. The onshore flow in turn led to strong and gusty westerly winds across the mountains and deserts of southeast California that reached 36 mph in Imperial County.[12]

Entrained windblown dust from natural areas, particularly from the desert areas west of Niland, along with anthropogenic sources controlled with BACM, is confirmed by the meteorological and air quality observations July 8, 2015. As discussed in section II, the NWS office issued four Urgent Weather Messages for the San Diego Mountains and deserts and Imperial County. The Urgent Weather messages advised of strong westerly winds and the reduce visibility due to blowing dust and sand.

Figure 5-1 is an Aqua MODIS Satellite image displaying light plumes of dust blowing across Imperial County as captured by the MODIS instrument onboard the Aqua satellite at ~13:30 PST.

FIGURE 5-1
AQUA MODIS CAPTURES LIGHT BLOWING DUST JULY 8, 2015

Fig 5-1: The MODIS instrument onboard the Aqua satellite (13:30 PST) captured dust transported across Imperial County in July 8, 2015 over the region. ***A thin layer of dust is detectable over the Salton Sea***. Source: AirNow Tech Navigator

[12] Area Forecast Discussion National Weather Service San Diego CA 237 AM PST (337 AM PDT) and Phoenix AZ 110 PM PST (210 PM MST) Wednesday, July 8, 2015

Figure 5-2 shows the Aerosol Optical Depth over the region using the Deep Blue exponent layer. Warmer colors indicate a thicker column of aerosols.[13]

FIGURE 5-2
HEAVY AEROSOLS OVER IMPERIAL COUNTY

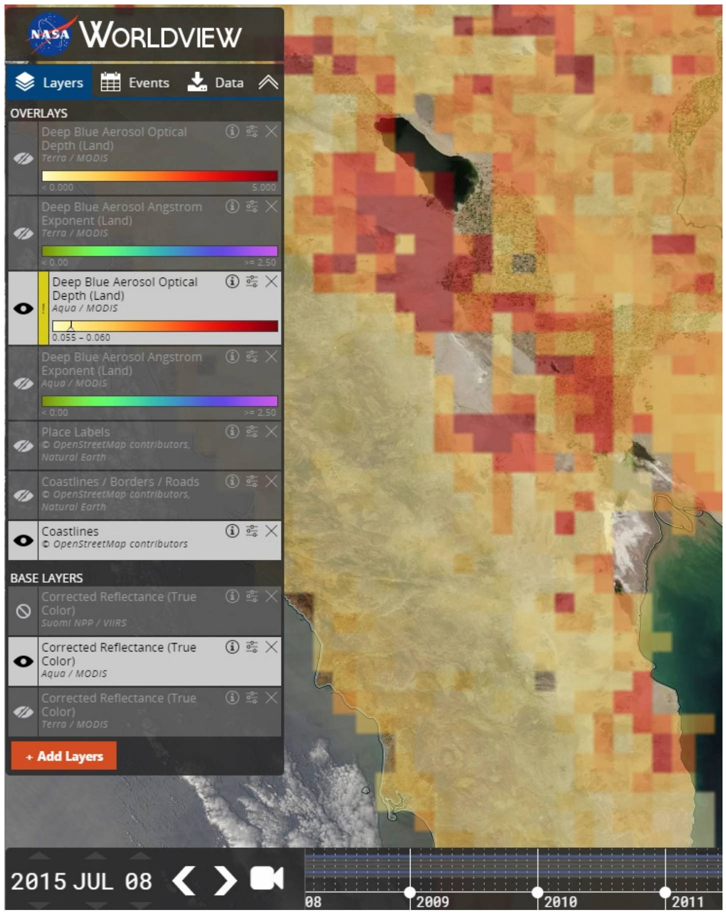


Fig 5-2: Aerosol Optical Depth (AOD) over Imperial County as captured by the MODIS instrument onboard the Aqua satellite at ~1330 PST on July 8, 2015. Warmer colors indicate a thicker column of aerosols. Source: https://worldview.earthdata.nasa.gov

[13] **Aerosol Optical Depth (AOD)** (or Aerosol Optical Thickness) indicates the level at which particles in the air (aerosols) prevent light from traveling through the atmosphere. Aerosols scatter and absorb incoming sunlight, which reduces visibility. From an observer on the ground, an AOD of less than 0.1 is "clean" - characteristic of clear blue sky, bright sun and maximum visibility. As AOD increases to 0.5, 1.0, and greater than 3.0, aerosols become so dense that sun is obscured. Sources of aerosols include pollution from factories, smoke from fires, dust from dust storms, sea salt, and volcanic ash and smog. Aerosols compromise human health when inhaled by people, particularly those with asthma or other respiratory illnesses. Source: https://worldview.earthdata.nasa.gov. The **Deep Blue Aerosol Optical Depth layer** is useful for studying aerosol optical depth over land surfaces. This layer is created from the Deep Blue (DB) algorithm, originally developed for retrieving over desert/arid land (bright in the visible wavelengths) where Dark Target approaches fail. The MODIS Deep Blue Aerosol Optical Depth (Land) layer is available from both the Terra (MOD04_L2) and Aqua (MYD04_L2) satellites for daytime overpasses. The sensor/algorithm resolution is 10 km at nadir, imagery resolution is 2 km at nadir, and the temporal resolution is daily. Resolution is much coarser out toward the edge of the swath.

Figures 5-3 and 5-4 are Deep Blue Angstrom Exponent layer. Greenish colors indicate larger aerosols that are more likely dust.[14] For additional information regarding the Deep Blue Angstrom Exponent layer see **Appendix A**.

FIGURE 5-3
HEAVY DUST LIKE AEROSOLS OVER SOUTHEAST CALIFORNIA AQUA SATELLITE

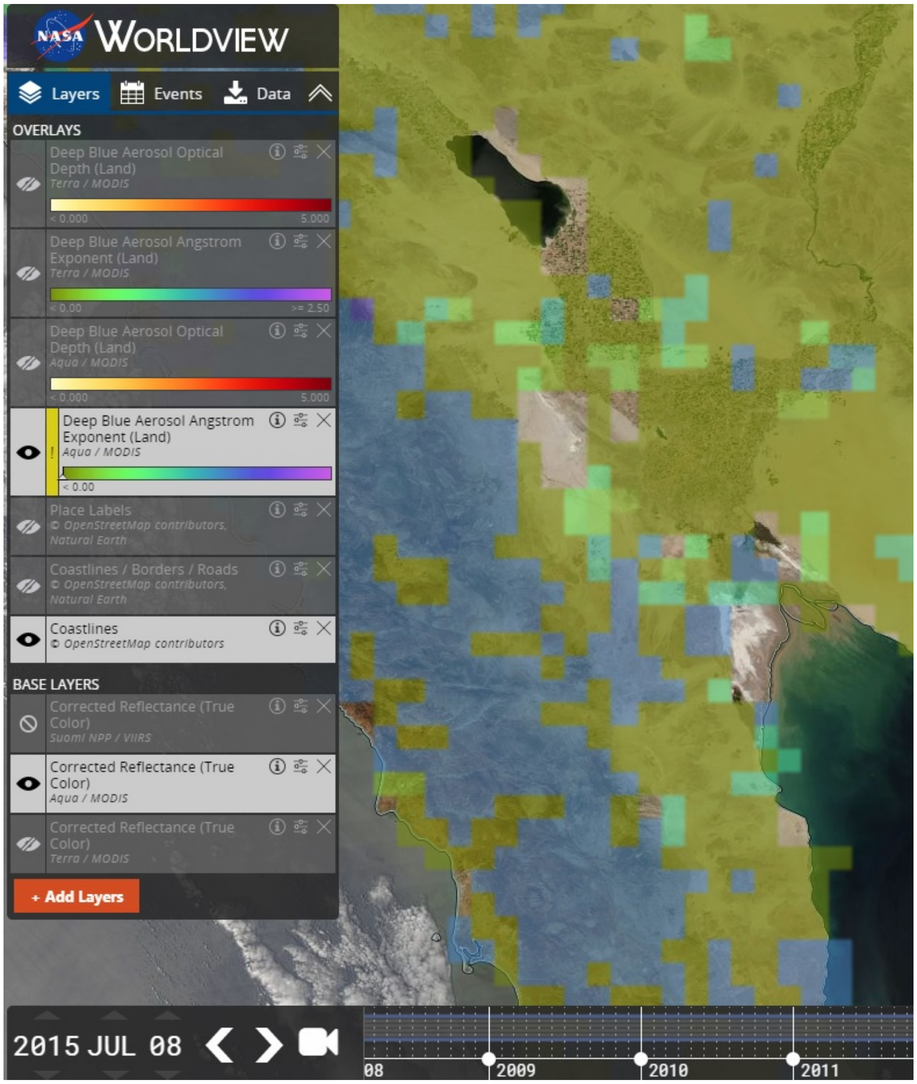


Fig 5-3: A thick layer of large-particle aerosols was captured over southeast California at ~1330 PST by the MODIS instrument onboard the Aqua satellite using the Deep Blue Angstrom Exponent layer. Greenish colors indicate the presence of large particles that are more likely dust. Source: https://worldview.earthdata.nasa.gov

[14] The MODIS Deep Blue Aerosol Ångström Exponent layer can be used to provide additional information related to the aerosol particle size over land. This layer is created from the Deep Blue (DB) algorithm, originally developed for retrieving over desert/arid land (bright in the visible wavelengths). The Ångström exponent provides additional information on the particle size (larger the exponent, the smaller the particle size). Values < 1 suggest optical dominance of coarse particles (e.g. dust) and values > 1 suggest optical dominance of fine particles (e.g. smoke).

FIGURE 5-4
HEAVY AEROSOLS OVER SOUTHEAST CALIFORNIA TERRA SATELLITE

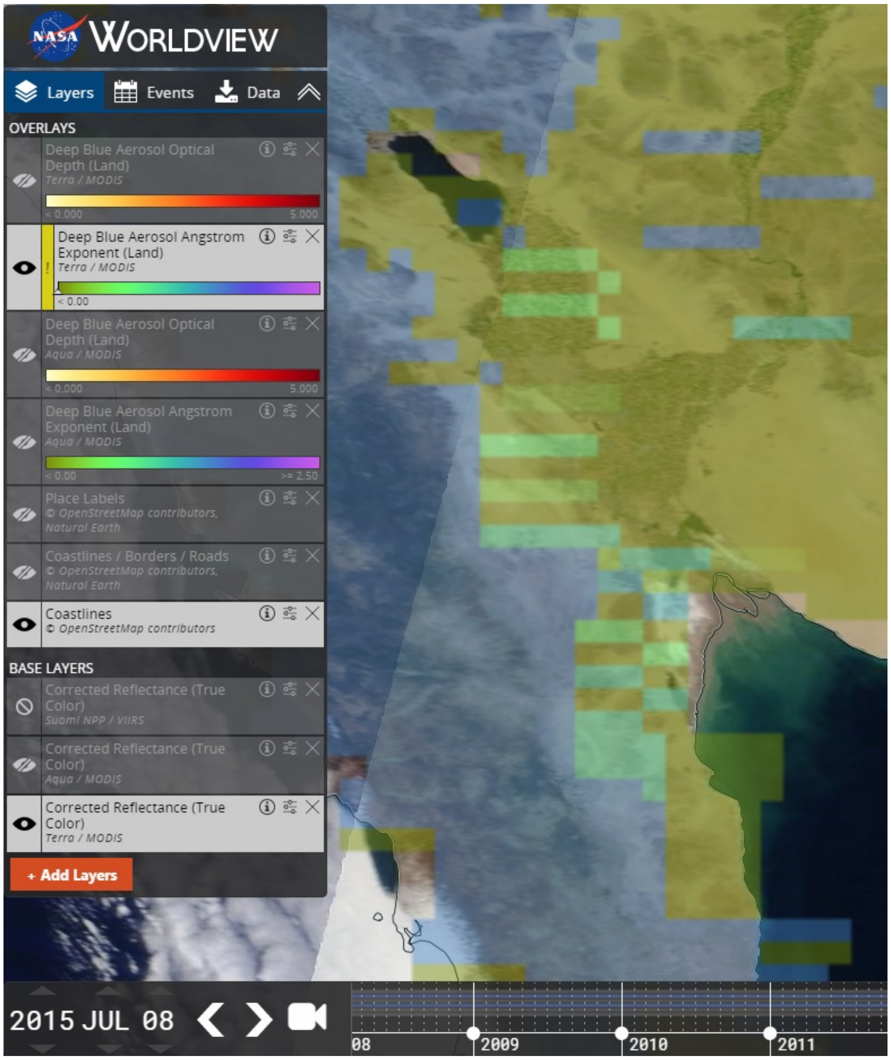


Fig 5-4: A thick layer of large-particle aerosols was captured over southeast California at ~1030 PST by the MODIS instrument onboard the Terra satellite using the Deep Blue Angstrom Exponent layer. This shows that a good amount of transported particles across Imperial County by elevated winds early in the morning. Greenish colors indicate the presence of large particles that are more likely dust. Source: https://worldview.earthdata.nasa.gov

Figures 5-5 and 5-6 depict the tightening of the surface gradient starting July 7, 2015 and continuing through July 8, 2015 that created a strong onshore flow and brought strong winds across southeast California. Gusty winds on July 7, 2015 transported dust into Imperial County and resulted in elevated concentrations going into the early hours of July 8, 2015. After a brief dip during the morning of July 8, winds picked up in the afternoon and continued to be strong for the remainder of the day.

FIGURE 5-5
SURFACE GRADIENT TIGHTENS ON JULY 7, 2015

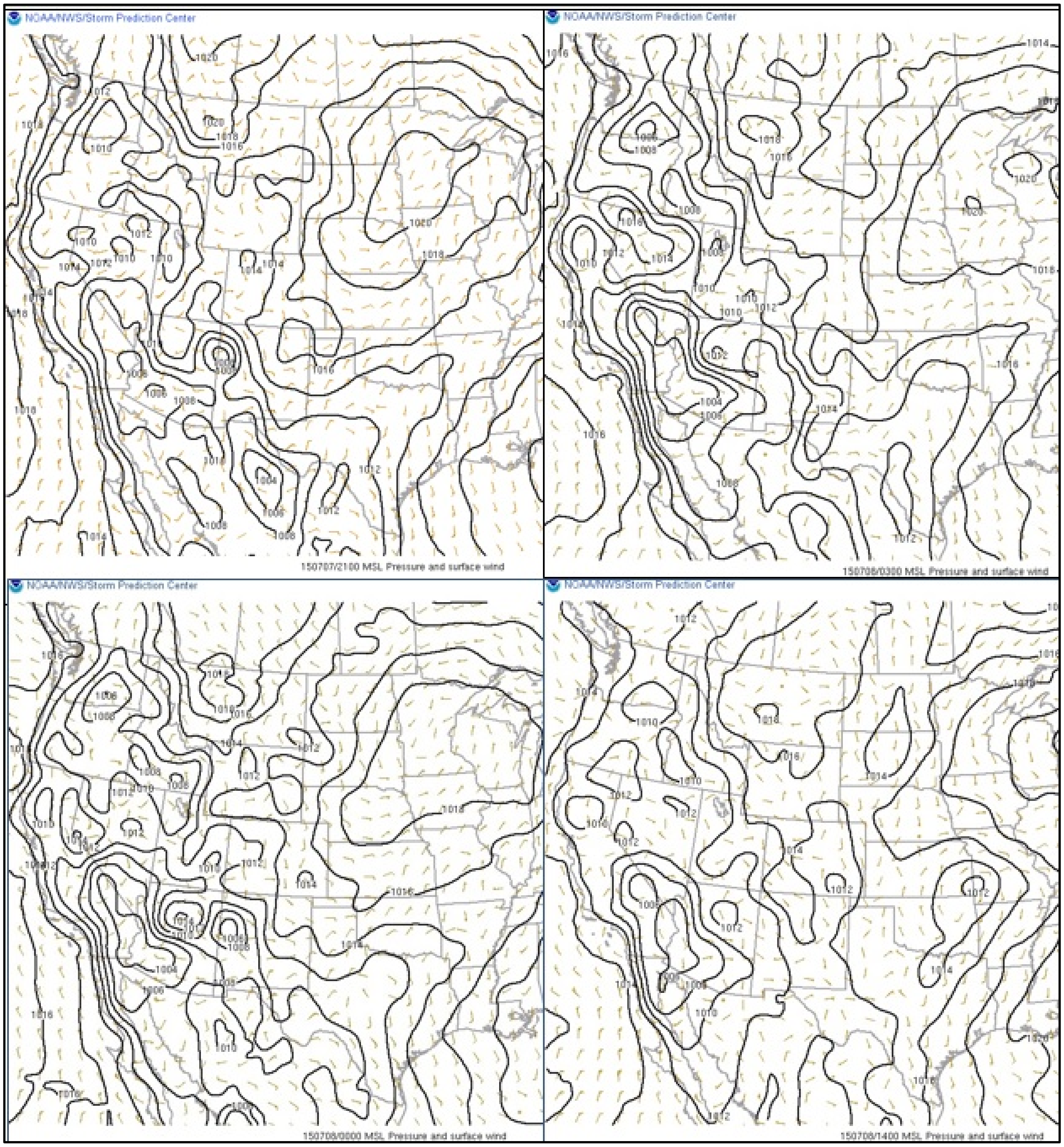


Fig 5-5: The tightening of the surface gradient on July 7, 2015 created a strong onshore flow. From left, top down: 1300 PST July 7, 2015 and 1600 PST July 7, 2015. From top right down: 1900 PST July 7, 2015 and 0600 PST July 8, 2015. Winds reduced slightly during the morning of July 8, 2015 only to increase later in the day. Source: http://www.spc.noaa.gov/exper/mesoanalysis/new/viewsector.php?sector=12

FIGURE 5-6
SURFACE GRADIENT REMAINS PACKED

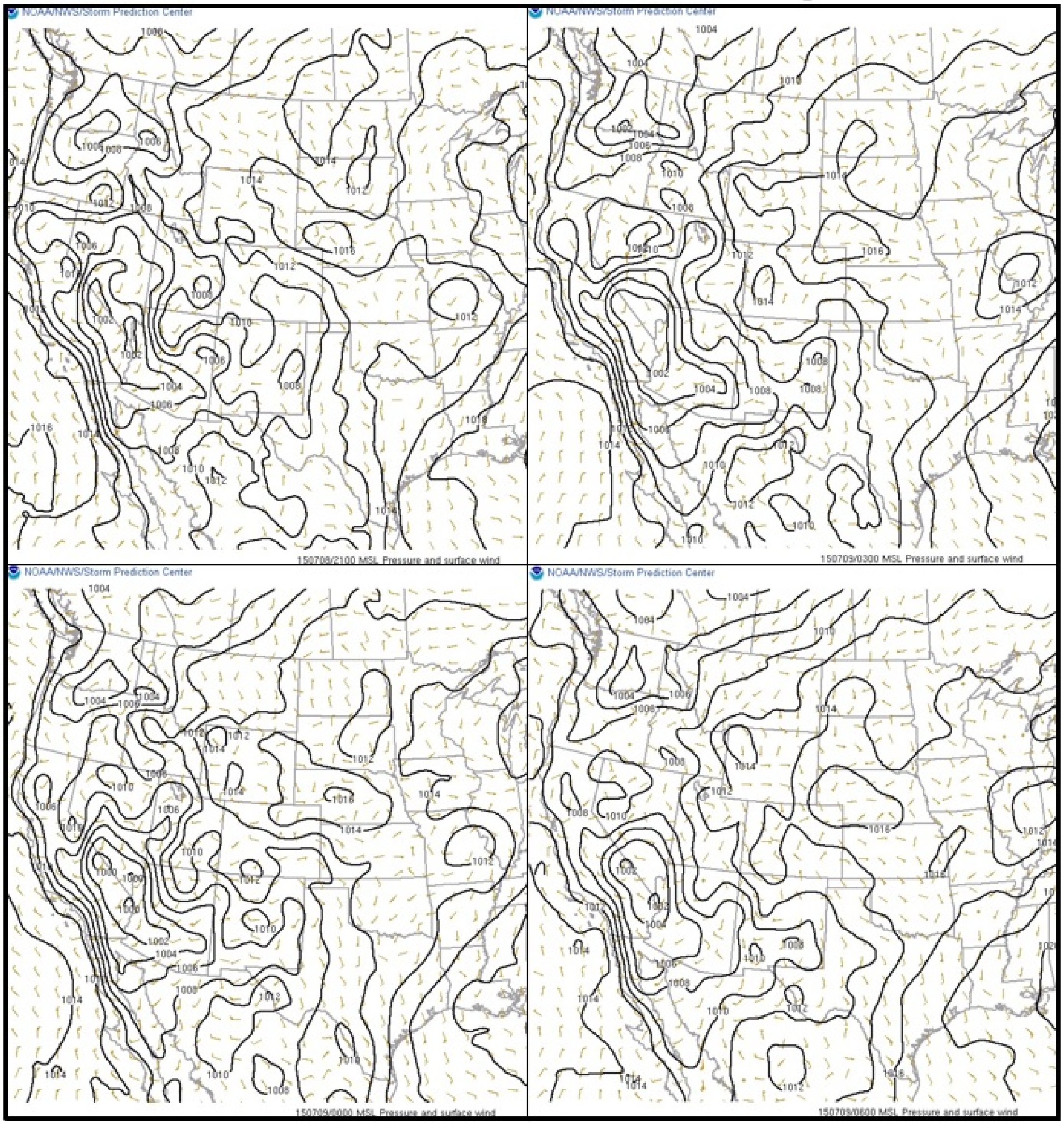


Fig 5-6: After relaxing slightly early on July 8, 2015, the surface gradient tightened and winds picked up in the afternoon and remained strong through the day. Left, top down: 1300 PST and 1600 PST. Right, top down: 1900 PST and 2200 PST July 8, 2015, all times PST. Source:
http://www.spc.noaa.gov/exper/mesoanalysis/new/viewsector.php?sector=12

The EPA accepts a high wind threshold for sustained winds of 25 mph in California and 12 other states.[15] **Tables 5-1 and 5-2** provide a temporal relationship of wind speeds, wind direction, wind gusts (if available), and PM_{10} concentrations at Niland. Due to the gusty winds during the latter

[15] "Treatment of Data Influenced by Exceptional Events; Final Guidance", FR Vol. 81, No. 191, 68279, October 3, 2016

part of July 7, 2015, hours from that day are also included.

TABLE 5-1
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR NILAND ON JULY 7, 2015 AND JULY 8, 2015

Ocotillo Wells (AS938/KD6RSQ5)				Imperial Co. Airport (KIPL)				El Centro NAF (KNJK)					Niland				Niland	
HR	W/S	W/D	W/G	HR	W/S	W/D	W/G	HR	W/S	W/D	W/G	Obs.	HR	W/S	W/D	W/G	HR	PM_{10} (µg/m³)
13:56	9	139	18	1353	5	220		1356	5	50			1300	5.8	239		1300	72
14:57	8	198	12	1453	9	260		1456	6	190			1400	5.3	177		1400	117
15:53	13	329	24	1553	3	270		1556	3	VR			1500	5.8	196		1500	281
16:56	15	316	30	1653	9	240		1656	15	260			1600	5.5	171		1600	**111**
17:59	18	307	27	1753	14	260		1756	18	260			1700	7.2	199		1700	**45**
18:56	13	299	24	1853	14	270		1856	21	260			1800	10.8	231		1800	**297**
19:58	13	336	23	1953	16	280	24	1956	23	270	32		1900	8.6	245		1900	**225**
20:56	21	310	32	2053	14	270		2056	21	260			2000	7.6	236		2000	**147**
21:57	20	315	29	2153	16	280		2156	**25**	260			2100	6.1	240		2100	**136**
22:46				2253	17	270	25	2256	21	260			2200	1.9	208		2200	52
23:00				2353	14	270		2356	**26**	240			2300	3.2	200		2300	**106**
0:00				53	9	300		56	17	250			0000	7.2	277		0000	**150**
1:00				153	7	320		156	10	270			0100	7.6	289		0100	95
2:00	11	330	22	253	13	260		256	17	260			0200	4.4	275		0200	82
3:19	8	322	12	353	10	270		356	20	260			0300	2	162		0300	89
4:21				453	13	260		456	20	260			0400	4.7	147		0400	**109**
5:00	13	322	25	553	13	260		556	17	240			0500	6.8	282		0500	**113**
6:51	12	333	18	653	10	270		656	13	240			0600	3.2	263		0600	**108**
7:17	6	315	11	753	8	190		756	11	260			0700	4.4	232		0700	**156**
8:56	9	201	13	853	7	180		856	8	140			0800	4.5	217		0800	**173**
9:31	9	319	19	953	8	170		956	7	VR			0900	2.4	234		0900	39
10:56	4	313	9	1053		M		1056	11	260	17		1000	3.1	237		1000	25
11:57	10	303	25	1153	16	260	24	1156	17	250	28		1100	1.6	173		1100	21
12:56	17	300	31	1253	15	250		1256	21	230			1200	4.4	252		1200	50
13:49	14	306	33	1353	21	250	24	1356	**25**	240			1300	4.9	243		1300	17
14:17	20	302	34	1453	23	240	32	1456	**31**	240	36		1400	5	232		1400	15
15:21	15	307	34	1553	23	250	33	1556	**33**	240	39		1500	6.7	250		1500	86
16:51	20	284	39	1653	**26**	250	34	1656	**33**	250	40		1600	16.7	267		1600	**237**
17:51	19	305	42	1753	**26**	250	37	1756	**36**	240	41	**BLDU**	1700	18.4	262		1700	**332**
18:46	18	306	32	1853	**26**	260	37	1856	**33**	260	40	**BLDU**	1800	21.8	252		1800	**541**
19:46	20	309	33	1953	23	260	38	1956	**31**	260	39		1900	**25.3**	247		1900	**534**
20:21	20	307	38	2053	**25**	270	39	2056	**30**	270			2000	24.1	254		2000	**442**
21:52	21	312	38	2153	21	280	32	2156	**29**	250			2100	21.8	256		2100	**220**
22:51	20	320	31	2253	**25**	270	33	2256	**29**	250	34		2200	20.2	261		2200	**159**
23:02				2353	17	270	29	2356	24	250	34		2300	20.4	252		2300	**205**

Blue indicates July 7, 2015. Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Ocotillo Wells (AS938/KD6RSQ5) from the University of Utah's MesoWest system. HR = hour; wind speeds = mph; Direction = degrees; BLDU=blowing dust. Niland station does not measure wind gusts

TABLE 5-2
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR NILAND ON JULY 7, 2015 AND JULY 8, 2015

Volcan Mountain (VCMSD)				Fish Creek Mtns. (FHCC1)				Naval Test Base				Niland				Niland	
HR	W/S	W/D	W/G	HR	W/S	W/D	W/G	HR	W/S	W/D	W/G	HR	W/S	W/D		HR	PM_{10} (µg/m³)
1350	17	225	26	1326	5	182	17	1300	8.7	80		1300	5.8	239		1300	72
1450	21	225	29	1426	9	210	20	1400	12	68		1400	5.3	177		1400	117
1550	25	227	33	1526	13	201	26	1500	12.1	78		1500	5.8	196		1500	281
1650	25	227	33	1626	15	197	26	1600	6.2	183		1600	5.5	171		1600	111
1750	16	234	23	1726	15	201	28	1700	15	223		1700	7.2	199		1700	45
1850	16	237	19	1826	13	201	27	1800	13.7	260		1800	10.8	231		1800	297
1950	20	232	27	1926	15	219	25	1900	15.2	267		1900	8.6	245		1900	225
2050	18	231	23	2026	19	220	28	2000	14.5	280		2000	7.6	236		2000	147
2150	19	233	24	2126	21	220	29	2100	13.2	283		2100	6.1	240		2100	136
2250	19	234	23	2226	19	209	28	2200	13.8	283		2200	1.9	208		2200	52
2350	17	236	22	2326	15	206	26	2300	11.5	280		2300	3.2	200		2300	106
050	16	234	20	026	14	200	21	0000	11.2	295		0000	7.2	277		0000	150
150	18	233	23	126	1	199	17	0100	10	289		0100	7.6	289		0100	95
250	17	237	21	226	11	200	15	0200	9.9	302		0200	4.4	275		0200	82
350	22	233	29	326	3	198	14	0300	8.9	313		0300	2	162		0300	89
450	22	233	28	426	8	201	13	0400	7.1	320		0400	4.7	147		0400	109
550	20	234	25	526	12	194	16	0500	8.5	294		0500	6.8	282		0500	113
650	19	235	25	626	14	216	20	0600	8.7	301		0600	3.2	263		0600	108
750	16	236	21	726	10	207	19	0700	9.5	323		0700	4.4	232		0700	156
850	17	235	21	826	6	196	13	0800	4.9	331		0800	4.5	217		0800	173
950	17	233	25	926	1	41	10	0900	6.4	92		0900	2.4	234		0900	39
1050	16	236	26	1026	2	143	10	1000	6.2	52		1000	3.1	237		1000	25
1150	22	227	34	1126	6	323	14	1100	9.4	63		1100	1.6	173		1100	21
1250	24	230	36	1226	6	20	12	1200	10.2	73		1200	4.4	252		1200	50
1350	24	228	36	1326	14	253	24	1300	11.2	78		1300	4.9	243		1300	17
1450	24	229	36	1426	11	261	25	1400	4.6	296		1400	5	232		1400	15
1550	22	222	34	1526	12	269	31	1500	16.5	271		1500	6.7	250		1500	86
1650	27	225	37	1626	12	278	39	1600	19.5	262		1600	16.7	267		1600	237
1750	34	226	46	1726	13	288	31	1700	20.4	258		1700	18.4	262		1700	332
1850	34	226	42	1826	11	55	42	1800	20.5	253		1800	21.8	252		1800	541
1950	31	229	40	1926	17	63	40	1900	18.9	258		1900	25.3	247		1900	534
2050	32	227	43	2026	6	249	36	2000	18.3	261		2000	24.1	254		2000	442
2150	34	229	45	2126	18	222	25	2100	18.9	267		2100	21.8	256		2100	220
2250	34	229	44	2226	14	214	27	2200	18.5	267		2200	20.2	261		2200	159
2350	34	229	43	2326	12	209	21	2300	15.5	265		2300	20.4	252		2300	205

Blue indicates July 7, 2015. Wind data for Niland from the AQS system. Wind data for Volcan Mountain and Fish Creek Mountains from the University of Utah's MesoWest system. HR = hour; wind speeds = mph; Direction = degrees. Niland station does not measure wind gusts

As mentioned above, the July 8, 2015 wind pattern resembled that of a spring season pattern with a dry southwest flow aloft dominating the area preceding the low-pressure system as it moved inland into California. In addition, the week, including Monday, July 6, 2015, prior to the July 8, 2015 event monsoonal systems affected the northwest region along the San Bernardino Mountains, along the higher deserts and along the western portion of Arizona. The Phoenix NWS issued storm reports as early as July 6, 2015 indicating that storms were moving east and southeast into areas such as Wittmann and Gila Bend. The monsoonal activity, preceding the July 8, 2015 event, and the dry conditions would have created ideal surface conditions within the southeastern portion of Riverside County to affect the Niland monitor in a way that the Brawley monitor would not experience (**Figure 2-23**).

An influence from the areas located within the southeastern portion of Riverside County and the moderate and variable wind speeds the evening of July 7, 2015 and the morning of July 8, 2015 affected the Niland monitor much more significantly than at the Brawley monitor when windblown dust aloft was transported into Imperial County.

The few hours during the early to mid-morning hours of July 8, 2015 when winds reduced slightly was not sufficient to allow for the settling of dust entrained during the evening hours of July 7, 2015 and the morning hours of July 8, 2015. Along with elevated afternoon and evening winds, the dry air mass aloft and the westerly winds both the Niland and Brawley monitors to measured elevated concentrations of PM_{10}. Although both monitors measured elevated concentrations of PM_{10} only the Niland monitor measured significantly higher and more continuous hours of elevated emissions, thus causing an exceedance only at the Niland monitor.

As mentioned in section II, July 8, 2015 was not a scheduled sampling day for the FRM SSI monitors. However, some assumptions based on the observed meteorological analysis for July 7, 2015 and July 8, 2015 maybe made. It is very likely that the Westmorland monitor would have measured elevated concentrations much like Brawley. However, it is unclear whether the Westmorland monitor would have exceeded. For the El Centro and Calexico stations it is likely that measured concentrations would have been less elevated. Current analysis indicates that high winds associated with the upper-level low-pressure significantly affected monitors within the northern region of Imperial County during the late to early morning hours of July 7, 2015 and July 8, 2015. By the afternoon to evening hours of July 8, 2015, when measured wind speeds and gusts were strongest, all monitors in Imperial County would have measured elevated concentrations.

Figure 5-7 is a graphic depiction that combines a HYSPLIT trajectory, upstream and downstream wind speeds, and important peak concentration times. The graphic provides a visual depiction regarding the general areas identified by the Urgent Weather messages issued by the NWS offices in Phoenix and San Diego, as areas of high winds and blowing dust. The four wind advisories clarified that a significant impact to high profile vehicles could have difficulty due to cross winds. Interstate 8, Interstate 10 and Highway 86 near Salton City were identified in different issued Urgent Weather messages July 8, 2015. The strongest winds and gusts occurred during the afternoon and evening hours of July 8, 2015 when the predominant wind direction was from the west. Both the Imperial County Airport (KIPL) and El Centro NAF (KNJK), measured five and 10 hours, respectively, of winds at or above 25 mph.

FIGURE 5-7
EXCEEDANCE FACTORS

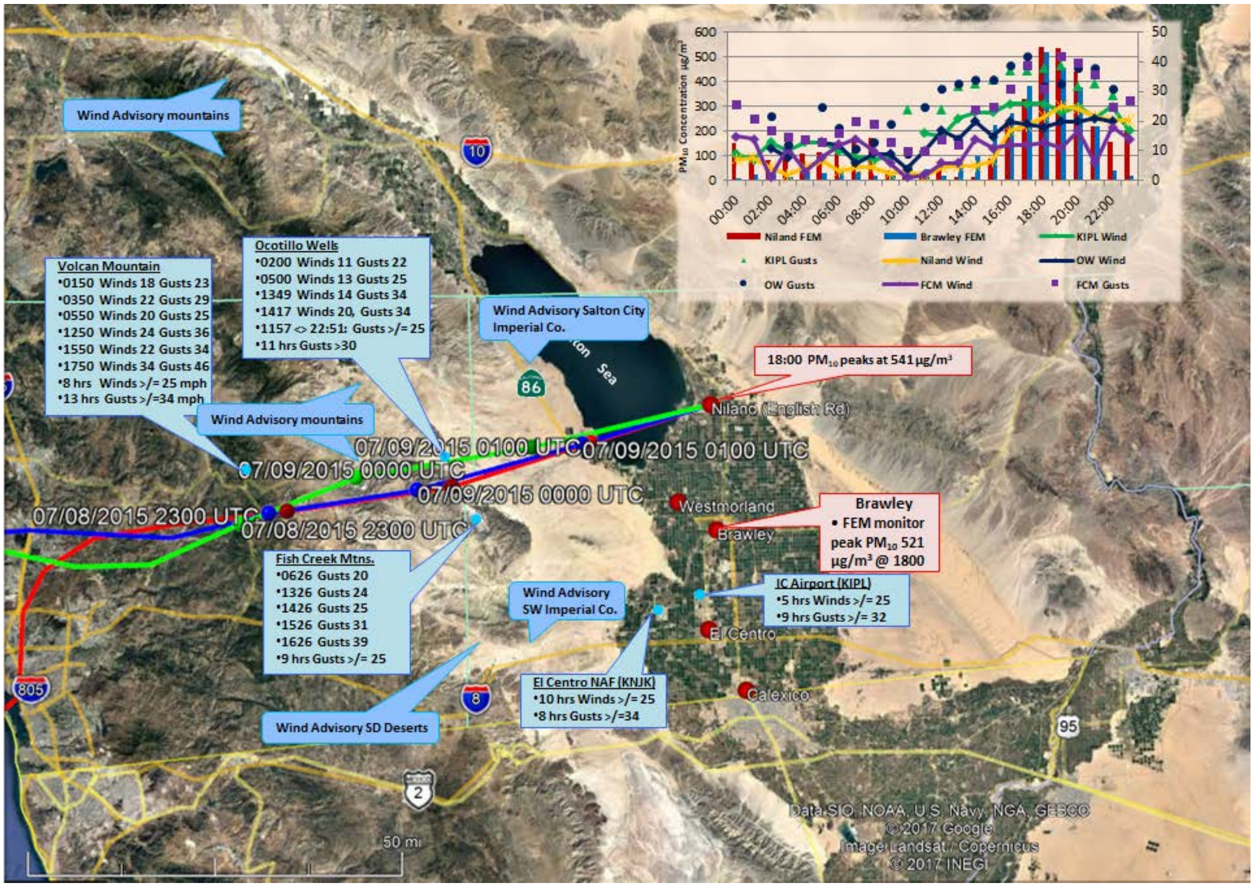


Fig 5-7: Gusty high winds as measured at key meteorological sites blew through the San Diego County mountain slopes and deserts into natural open areas and agricultural lands within Imperial County causing windblown dust causing an exceedance at the Niland monitor. Red line indicates airflow at the 10 meters AGL (above ground level); blue indicates airflow at 100 meters AGL; green indicates airflow at 500 AGL. Generated through NOAA's Air Resources Laboratory. Google Earth base map

Figure 5-8 demonstrates the temporal relationship between the high winds and the windblown dust affecting the Niland monitor. The correlation of hourly concentrations measured at the Niland monitor and the elevated wind speeds on July 8, 2015, indicate that as wind speeds increased so did concentrations of PM_{10}. The highest elevated hourly PM_{10} concentrations occurred throughout the late afternoon and evening hours of July 8, 2015 coincident with the high peak winds and gusts measured at different stations in Imperial County. As winds begin to decrease on July 9, 2015, so do concentrations of PM_{10}.

FIGURE 5-8
NILAND WIND AND PM_{10} CORRELATION

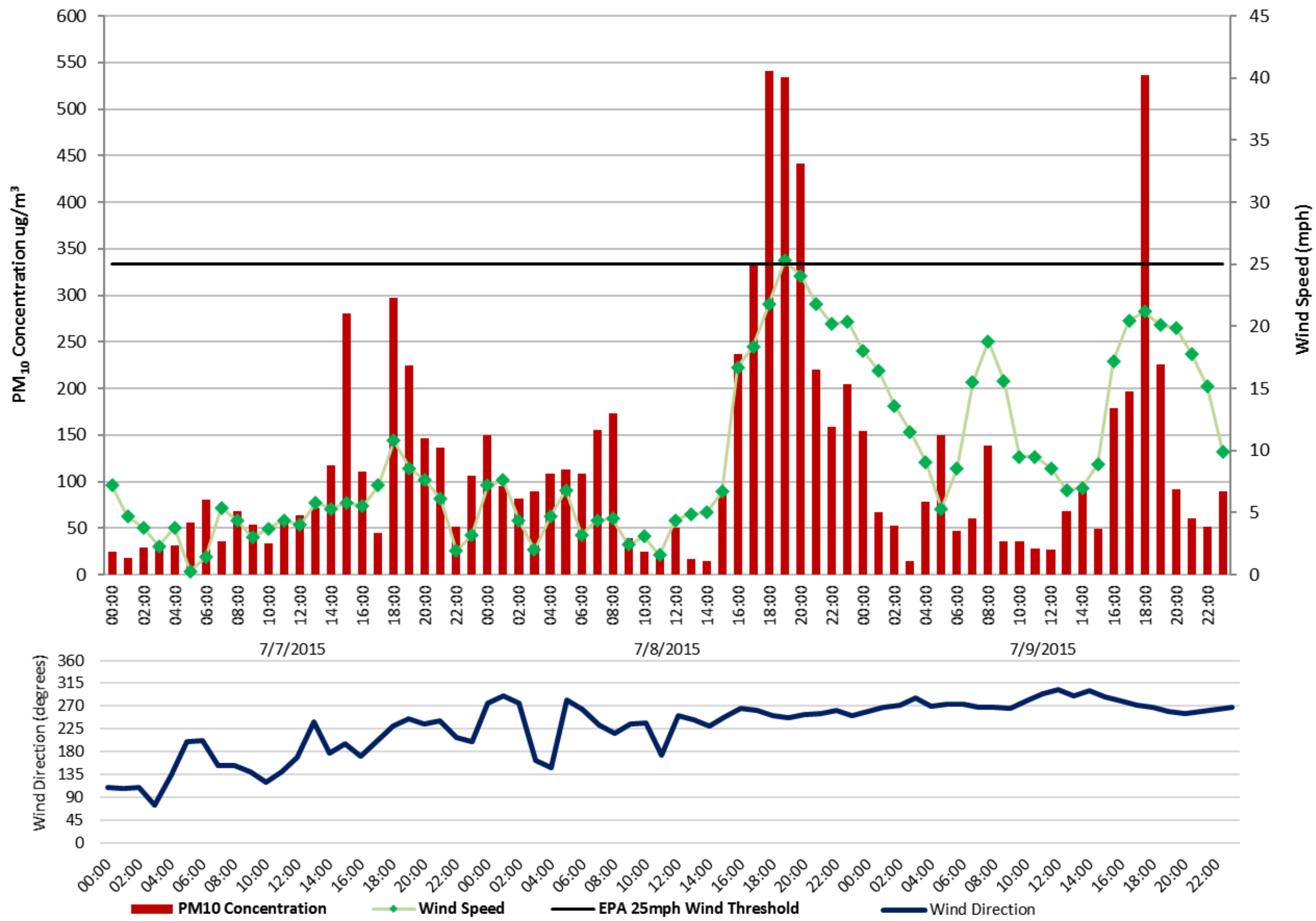


Fig 5-8: Peak hourly concentrations at the Niland monitor illustrate a positive correlation between increased wind speeds and concentrations over a 72-hour period. Wind and air quality data from the EPA's AQS system

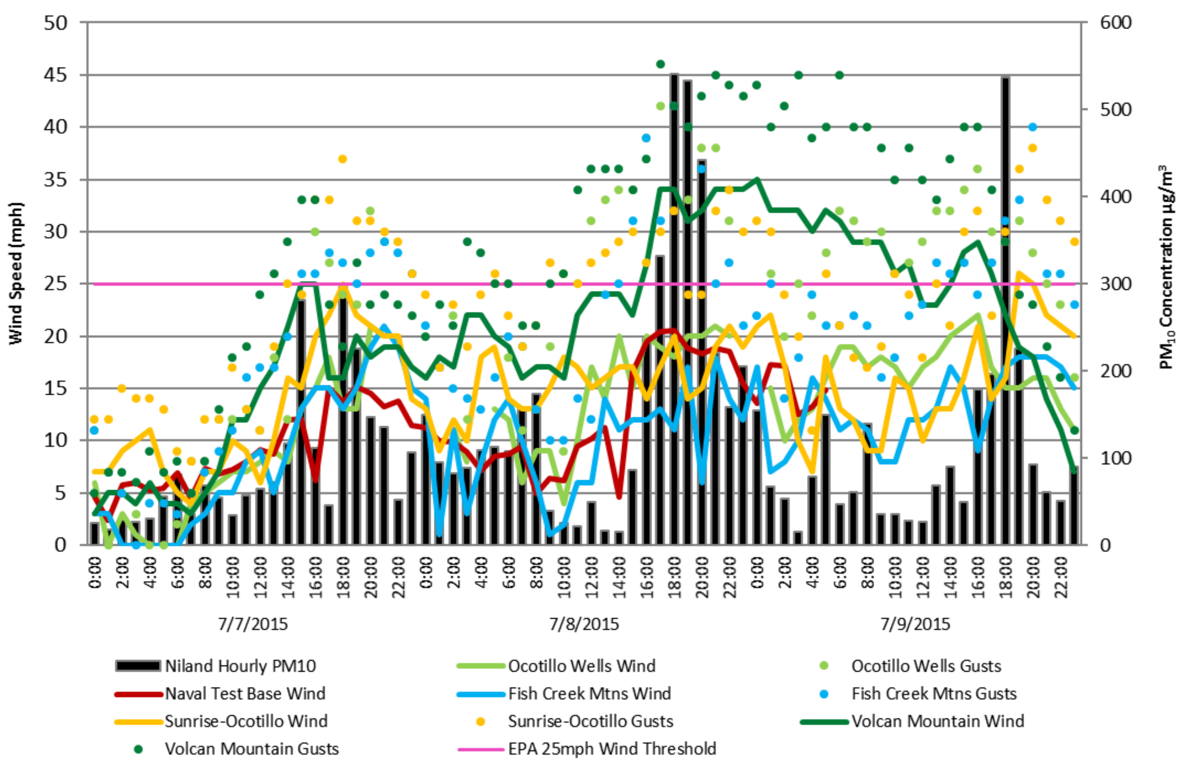
Figure 5-9 is a three day depiction of the concentrations measured by the Niland monitor along with upstream wind speeds. **Figure 5-10** is a comparison of the Brawley and Niland measured concentrations for July 8, 2015.

On July 7, 2015, windblown dust elevated concentrations at the Niland monitor. As explained in section II and above, the wind pattern affecting the monitoring stations was much more like a spring season wind pattern. This particular wind pattern came soon after seasonal monsoonal systems passed through within southeastern Riverside County and western Arizona creating disturbed surface areas. During the evening hours of July 7, 2015 and the morning hours of July 8, 2015 the Niland monitor measured elevated concentrations when moderate winds suspended particulates that travelled through the area from surrounding areas. Although winds decreased briefly during the morning hours of July 8, 2015, it was not enough to allow suspended particles to resettle at the surface.

Particles, to the north of Imperial County recently disturbed by a monsoonal occurrence that ended during the late evening hours of July 6, 2015 and early morning hours of July 7, 2015 and a dry airmass aloft preceding the upper-level low created ideal conditions for suspended particles to remain above surface levels.

On July 8, 2015, the Niland monitor, unlike the Brawley monitor, measured six hours of elevated concentrations of PM_{10} between the hours of midnight and 08:00am. Add the additional eight hours of elevated PM_{10} during the late afternoon and evening hours and an exceedance occurs. Moderate winds during the evening hours of July 7, 2015 and the morning hours of July 8, 2015 along with the stronger westerly winds during the late afternoon and evening hours of July 8, 2015, terrain and the dry airmass aloft provided the ideal conditions for the Niland monitor to exceed the NAAQS on July 8, 2015.

FIGURE 5-9
PM_{10} CONCENTRATIONS AND UPSTREAM WIND SPEEDS



*Notice: overlapping of wind data points from different stations may occur

Fig 5-9: Niland's PM_{10} concentrations compared with upstream wind sites in both the mountains and valley floor. Air quality data from the EPA's AQS data bank. Wind data from the University of Utah's MesoWest. See **Figures 2-23 and 2-24** HYSPLITs and **Appendix B** for station graphs

FIGURE 5-10
NILAND AND BRAWLEY CONCENTRATION COMPARISON

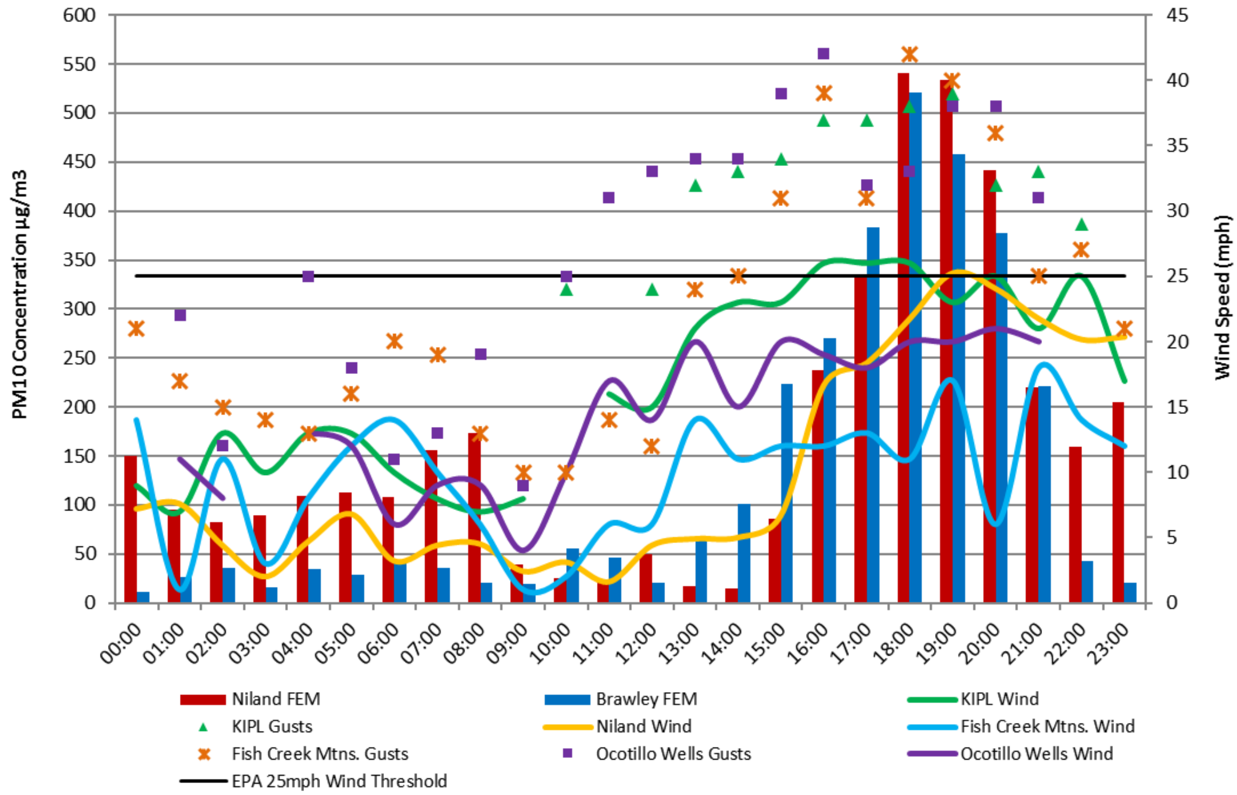


Fig 5-10: Suspended particles from the previously disturbed surface areas by monsoonal activity within the southeastern portion of Riverside County and western Arizona, moderate winds during the morning hours of July 8, 2015 along with the dry airmass preceding the upper-level low provided the ideal conditions for the Niland monitor to exceed the NAAQS and not Brawley. Essentially, the Niland monitor measured six additional hours of elevated concentrations during the morning hours of July 8, 2015, unlike the Brawley monitor

Figure 5-11 are the two HYSPLIT back-trajectory images, discussed in section II, **Figures 2-22 and 2-23**, ending for all stations at 0800 PST and 1800 PST on July 8, 2015. The images provide a visual of the airflow for the am hours and the pm hours on July 8, 2015. Section II and the discussion above explain the influence upon the Niland monitor from areas located within the southeastern section of Riverside County.

Four Urgent Weather messages, which included wind advisories, issued by the San Diego NWS office and Phoenix NWS office identified source areas of high winds as the San Diego County Deserts, San Gorgonio Pass near Banning along interstate 10 and Interstate 8 through the San Diego County mountains and deserts (254 am PST). Imperial County, including the cities of Brawley, Calexico, El Centro, Glamis, Imperial, and the Salton Sea including far southwest Imperial County, Ocotillo, portions of interstate 10 from near Dixieland west toward San Diego County and Salton City including nearby portions of Highway 86 (744 am PST). At 1139pm PST the San Diego NWS office issued its second advisory identifying the San Diego County deserts, through and below the San Gorgonio Pass along and north of interstate 10, wind-prone areas of the San Diego County deserts including Interstate 8. Finally, at 233 pm PST the Phoenix NWS office issued its second advisory identifying the same affected areas as before the far southwest of Imperial County including Ocotillo, portions of Interstate 8 from near Dixieland west toward San Diego County and Salton City including nearby portions of Highway 86.

FIGURE 5-11
HYSPLIT BACK TRAJECTORY FOR ALL STATIONS

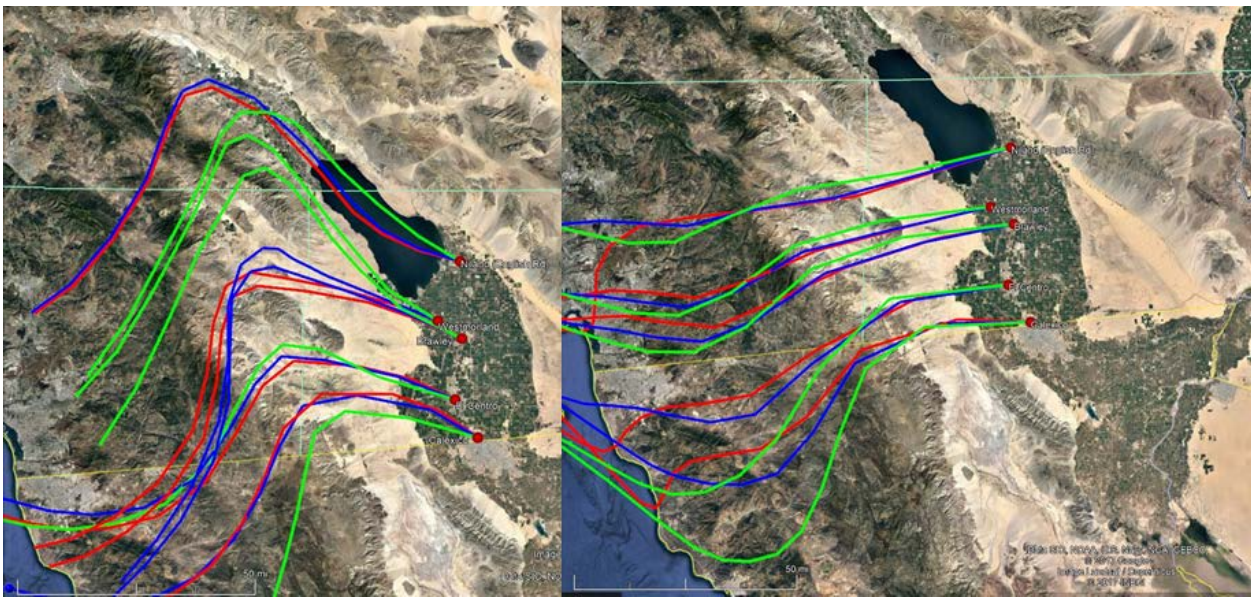


Fig 5-11: The HYSPLIT back-trajectory ending at all stations at 0800 (left image) and at 1800 (right image) PST on July 8, 2015 are captured during the respective am and pm hourly peak concentrations at Niland. Red line indicates air flow at the 10 meters AGL (above ground level); blue indicates air flow at 100 meters AGL; green indicates air flow at 500 AGL. Dynamically generated through NOAA's Air Resources Laboratory

All four issued Urgent Weather messages, discussed above, included impacts of reduced visibility due to blowing dust and sand. The San Diego NWS office identified strong crosswinds along Interstate 8 and Interstate 10 and reduced visibility as factors for causing difficult navigation along roads by high profile vehicles. The Phoenix NWS office, similarly, identified difficult driving conditions due to reduced visibility caused by blowing dust. **Appendix A** contains copies of notices pertinent to the July 8, 2015 event.

FIGURE 5-12
72 HOUR PM_{10} CONCENTRATIONS AND VISIBILITY AT LOCAL AIRPORTS

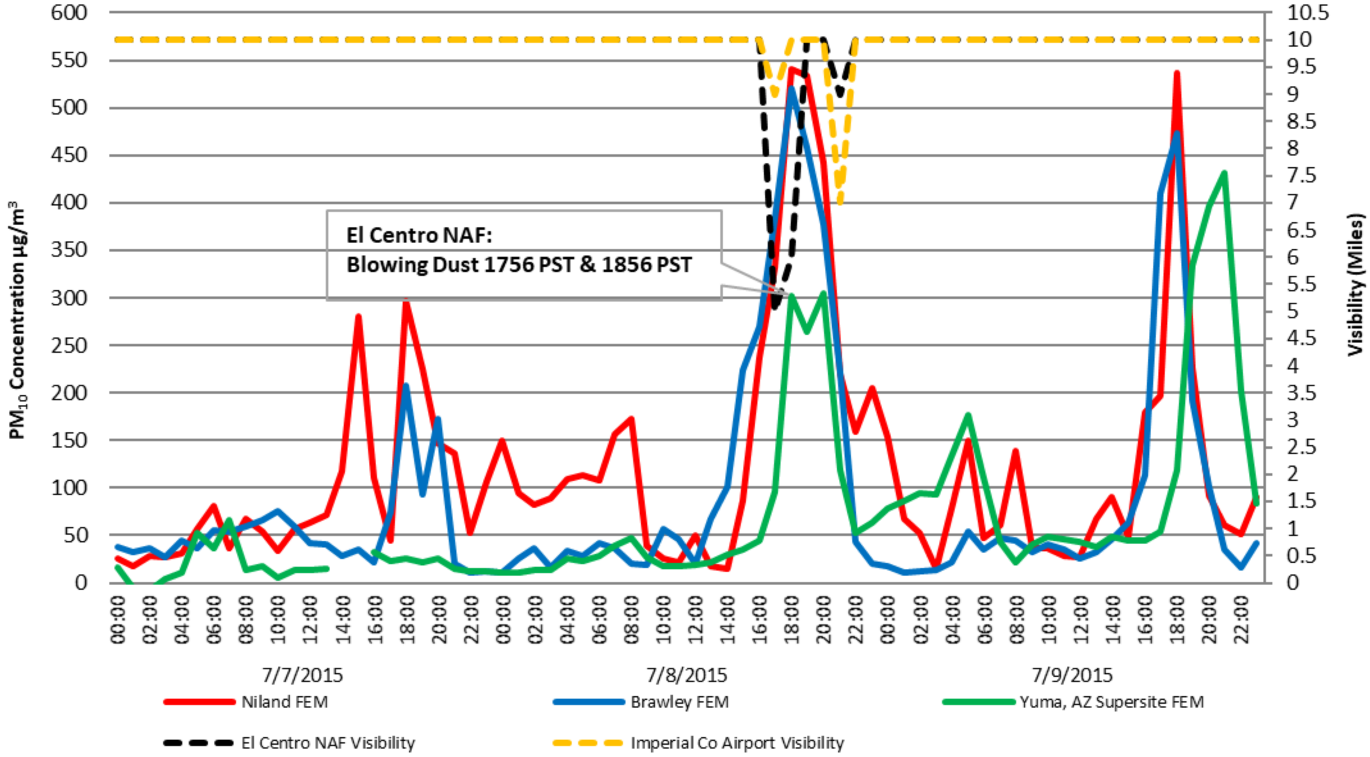


Fig 5-12: Visibility, as measured by the El Centro NAF (KNJK) and Imperial County Airport (KIPL). Minimum visibility at KIPL, which is marginally closer to Brawley, came a bit later. Both the Niland and Brawley monitors measured its highest elevated concentrations coincident with measured minimum visibility at NAF

As mentioned above, the Phoenix NWS issued storm reports as early as July 6, 2015 indicating that storms were moving east and southeast into areas such as Wittmann and Gila Bend. In addition, four Urgent Weather messages, which included wind advisories, issued by the San Diego NWS office and Phoenix NWS office identified source areas of high winds such as areas southwest of Imperial County including Ocotillo, portions of Interstate 8 near Dixieland west toward San Diego County and Salton City including nearby portions of Highway 86. A useful measurement of the degradation of air quality is the Air Quality Index (AQI).[16] Air quality alerts issued for the Niland area advised of unhealthy conditions for sensitive groups such as the elderly and children (**Appendix A)**.

[16] The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health affects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country. Source: https://airnow.gov/index.cfm?action=aqibasics.aqi

Figure 5-13 provides the resultant AQI for July 8, 2015. As gusty westerly winds reached Imperial County, the level of reduced air quality became evident when the AQI level changed from "Green" or Good to "Orange" or Unhealthy for Sensitive Receptors. The lower air quality affirms that on July 8, 2015 strong gusty westerly winds transported windblown dust into Imperial County affecting air quality.

FIGURE 5-13
AIR QUALITY INDEX FOR NILAND JULY 8, 2015

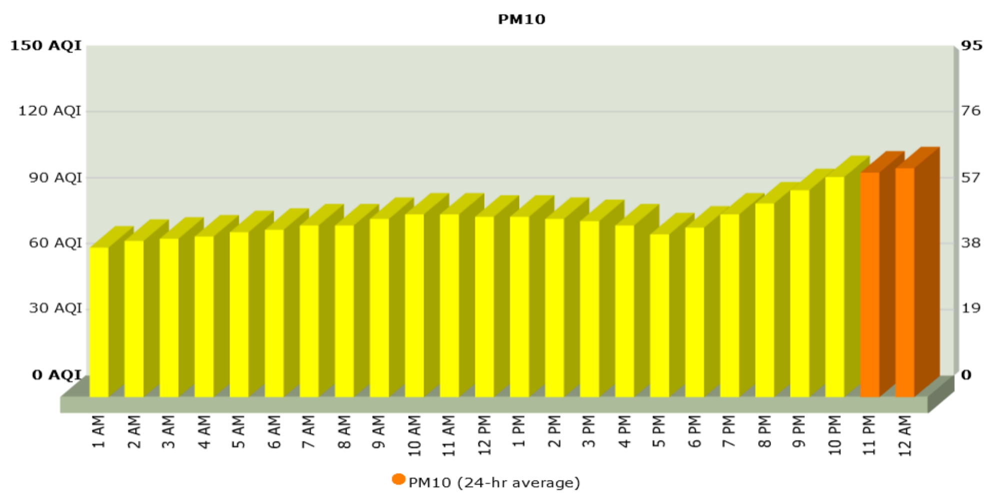


Fig 5-13: Demonstrates that air quality in Imperial County reduced when gusty westerly winds blew into Imperial County transporting windblown dust on July 8, 2015

V.2 Summary

The preceding discussion, graphs, figures, and tables provide wind direction, speed and concentration data illustrating the spatial and temporal effects of the pressure gradient accompanying the low-pressure that passed through California. The information provides a clear causal relationship between the transported windblown dust and the PM_{10} exceedance measured at the Niland monitor on July 8, 2015. Furthermore, the advisories and issued air quality index illustrate the effect upon air quality within the region extending from all of Imperial County and the southern portion of Riverside County. Large amounts of coarse particles (dust) and PM_{10} transported by gusty westerly winds caused a change in the air quality conditions within Imperial County. The transported windblown dust originated from as far as the San Diego Mountains and deserts. Combined, the information demonstrates that the elevated PM_{10} concentrations measured on July 8, 2015 coincided with high wind speeds and that gusty westerly winds affected the southern portion of Riverside County, southeastern San Diego County, all of Imperial County, and parts of Arizona.

FIGURE 5-14
JULY 8, 2015 WIND EVENT TAKEAWAY POINTS

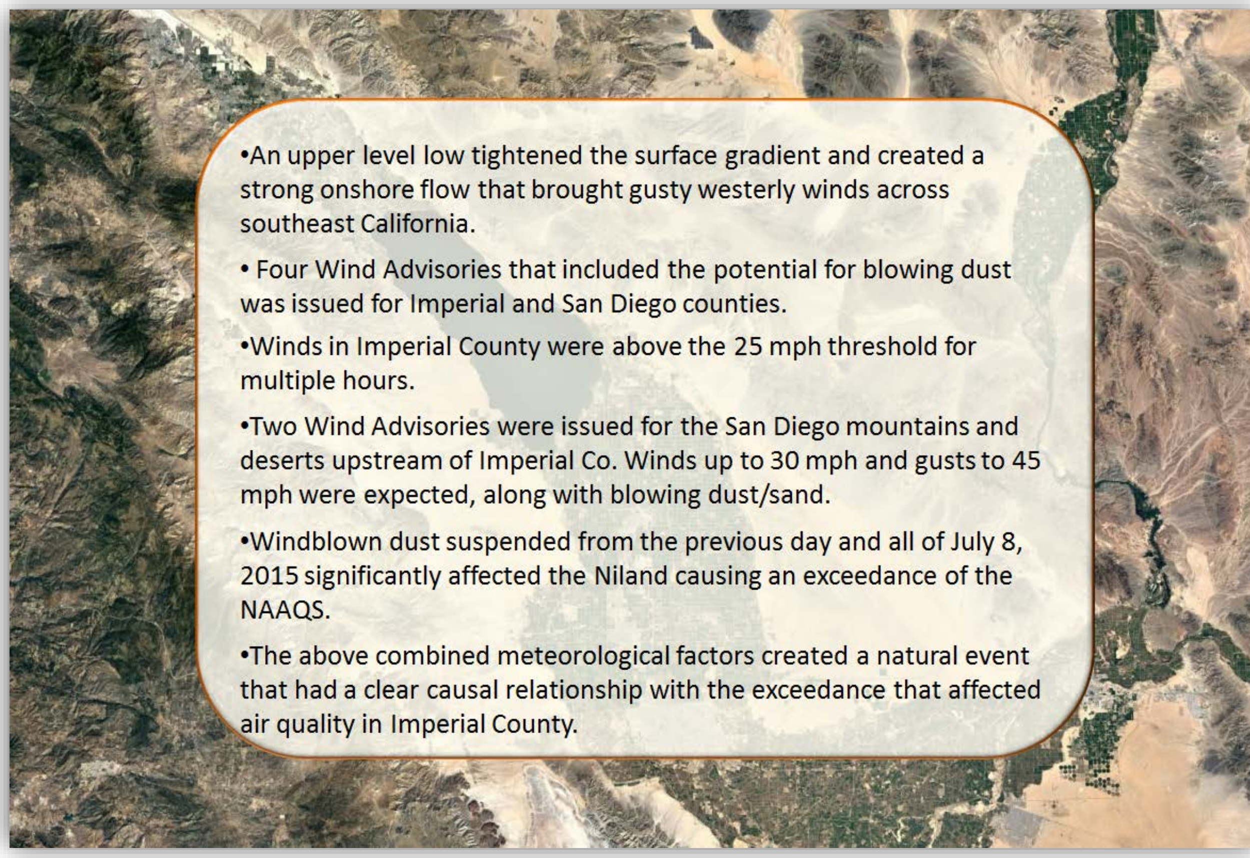


Fig 5-14: Illustrates the factors that qualify the July 8, 2015 natural event which affected air quality as an Exceptional Event

VI Conclusions

The PM_{10} exceedance that occurred on July 8, 2015, satisfies the criteria of the EER which states that in order to justify the exclusion of air quality monitoring data evidence must be provided for the following elements:

TABLE 6-1 TECHNICAL ELEMENTS CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})		DOCUMENT SECTION
1	A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s)	5-31
2	A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation	44-60
3	Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) of this section	32-36
4	A demonstration that the event was both not reasonably controllable and not reasonably preventable	37-43
5	A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event	44-60

VI.1 Affects Air Quality

The preamble to the revised EER states that an event has affected air quality if the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation. Given the information presented in this demonstration, particularly Section V, we can reasonably conclude that there exists a clear causal relationship between the monitored exceedance and the July 8, 2015 event, which changed or affected air quality in Imperial County.

VI.2 Not Reasonably Controllable or Preventable

Section 50.1(j) of 40 CFR Part 50 defines an exceptional event as an event that must be "not reasonably controllable or preventable" (nRCP). The revised preamble explains that the nRCP has two prongs, not reasonably preventable and not reasonably controllable. A natural wind event, which transports dust from natural open deserts, meets the nRCP, when sources are controlled by BACM and when human activity plays little to no direct causal role. This demonstration provides evidence that despite BACM in place within Imperial County, strong gusty winds overwhelmed all BACM controls where human activity played little to no direct causal role. The PM_{10} exceedance measured at the Niland monitor caused by naturally occurring strong gusty westerly winds transported windblown dust into Imperial County and other parts of southern California from areas located within the Sonoran Desert in Arizona and Mexico to the south and southeast of Imperial County. These facts provide strong evidence that the PM_{10} exceedance at Niland on July 8, 2015, were not reasonably controllable or preventable.

VI.3 Natural Event

The revised preamble to the EER clarifies that a "Natural Event" (50.1(k) of 40 CFR Part 50), which may recur at the same location, is an event where human activity plays little or no direct causal role. The criteria that human activity played little or no direct causal role occurs when the event, along with its resulting emissions, are solely from natural sources or where all significant anthropogenic sources of windblown dust have been reasonably controlled. As discussed within this demonstration, windblown dust anthropogenic sources reasonably controlled with BACM in and around Niland on July 8, 2015 meet the criteria that human activity played little or no direct causal role therefore, the event qualifies as a natural event.

VI.4 Clear Causal Relationship

The time series plots of PM_{10} concentrations at Niland during different days, and the comparative analysis of different monitors in Imperial, Riverside and Yuma counties demonstrates a consistency of elevated gusty westerly winds and concentrations of PM_{10} on July 8, 2015 (Section V). In addition, these time series plots and graphs demonstrate that the high PM_{10} concentrations and the gusty westerly winds were an event that was widespread, regional and not preventable. Arid conditions preceding the event resulted in soils that were particularly susceptible to particulate suspension by the elevated gusty westerly winds. Days immediately before and after the high wind event PM_{10} concentrations were well below the NAAQS. Overall, the demonstration provides evidence of the strong correlation between the natural event and the windblown dust emissions to the exceedance on July 8, 2015.

VI.5 Historical Concentrations

The historical annual and seasonal 24-hr average PM_{10} concentrations measured at the Niland monitor were historically unusual compared to a multi-year data set (Section III).

Appendix A: Public Notification that a potential event was occurring (40 CFR §50.14(c)(1)(i))

This section contains issued notices by the NWS and Imperial County pertinent to the July 8, 2015 event. Along with NWS notices, this Appendix contains any issued air quality alerts. Air quality alerts advise sensitive receptors of potentially unhealthy conditions in Imperial County resulting from a natural event. On July 8, 2015, the data illustrates a region-wide increase in wind speeds and wind gusts coincident with the arrival of dust and high PM_{10} concentrations in Imperial County. The **Appendix A supplemental** contains all the NWS notices issued by either the San

Diego or Phoenix office by date and time order.

Appendix B: Meteorological Data

This Appendix contains the time series plots, graphs, wind roses, etc. for selected monitors in Imperial, Riverside and Yuma counties along with other pertinent graphs, time series plots for other areas if applicable. These plots, graphs and tables demonstrate the regional impact of the wind event.

Appendix C: Correlated PM_{10} Concentrations and Winds

This Appendix contains the graphs depicting the correlations between PM_{10} Concentrations and elevated wind speeds for selected monitors within Imperial, Riverside, San Diego, and Yuma counties if applicable. Other areas are also included if applicable such as Mexico. These graphs demonstrate the region wide impact of the wind event.

Appendix D: Regulation VIII – Fugitive Dust Rule

This Appendix contains a description of the compilation of the BACM adopted by the ICAPCD and approved by the USEPA. Seven rules numbered 800 through 806 comprise the set of Regulation VIII Fugitive Dust Rules.